

Year 8 Scheme of work

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At Upper Shirley High

Guidelines

- This scheme of work is designed for pupils who have completed the Year 7 SOW. As such, in the year 2018-2019 there may be some occasions where it is not possible to cover everything as they did not follow the Year 7 SOW.
- The purpose of this scheme of work is to cover core topics in enough detail to give pupils maximal time to spend practising key skills that underpin secondary school mathematics (mastery). The key to success is revision and extension of topics from the Year 7 scheme of work whilst also teaching new topics. Topics that were not included on the year 7 scheme of work are in **bold** so that you are aware that they should be taught from first concepts, not simply revised.
- Pupils will be regularly assessed and given the opportunity to know how they are performing in comparison to other pupils who took the same test.
- 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.
- 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.

Year 8 SoW	Support	Core	Extension
<p>Written Calculations and Checking (including decimals)</p> <ul style="list-style-type: none"> - Addition and Subtraction (column method) 1:7, 1:8, 1:19, 1:20, - Multiplication including squaring (Gelosia method unless a pupil is 100% secure using another recognised method) 1:10, 1:22, 1:23, - Short division (bus stop method) 1:11, 1:24 - Mixed problems involving the above* 1:12, 	<p>Written Calculations and Checking (including decimals)</p> <ul style="list-style-type: none"> - Addition and Subtraction (column method) 1:7, 1:8, 1:19, 1:20, Speed tests p.17 - Multiplication including squaring (Gelosia method unless a pupil is 100% secure using another recognised method) 1:10, 1:22, 1:23, - Short division (bus stop method) 1:11, 1:24, 1:25 - Mixed problems involving the above* 1:12, 1:13, 1:14, 	<p>Written Calculations and Checking (including decimals)</p> <ul style="list-style-type: none"> - Addition and Subtraction (column method) 1:7, 1:8, 1:19, 1:20, Speed tests p.17 - Multiplication including squaring (Gelosia method unless a pupil is 100% secure using another recognised method) 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 	
<p>The Number system</p> <ul style="list-style-type: none"> - Revise multiplication and division by 10, 100 and 1000 start with more basic, no decimals (not in book), move on to 1:21 - Four operations with negative numbers 1:29, 1:30, 1:32. This is a key focus. Please use application to different situations to promote mastery. - 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 This is a key focus. Please use application to different situations to promote mastery. Not covered in depth at primary 1:30, 1:32, 1:31 - Negative numbers in context - Indices 1:35 <p>If finished move on to bold topics below to practise and apply skills.</p>	<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. - Negative numbers in context Lots of space here to extend top sets as this was new in year 7. - Indices 1:35, 1:37 - Standard form <p>If finished move on to bold topics below to practise and apply skills.</p>	
DC1 – beginning of week 6			
<ul style="list-style-type: none"> - Average and Range: 4:9 - Two way tables: 4:18 - Indices 1:35 	<ul style="list-style-type: none"> - Surface area 7:17 - Average and range: 4:9 - Mean from a frequency table: 4:10 - Two way tables 4:18 - Standard form from first principles 1:42, 1:43 	<ul style="list-style-type: none"> - Surface area 7:17 - Average and range: 4:9 - Mean from a frequency table: 4:10 - Two way tables 4:18 - Using standard form in different contexts. 1:42, 1:43, 2:17, 2:18 	
Half Term			

THE YEAR EIGHT INTRODUCTION TO SECONDARY SCHOOL ALGEBRA –

- Basic concepts of algebra **2:1**
- Simplifying expressions **2:3, 2:4**
- Solving simple equations using a clear recognised layout **2:9**
- **Expanding single brackets 2:5**
- **Expand and simplify two sets of brackets**

See ten ticks for additional resources on the early stages of algebra.

THE YEAR EIGHT INTRODUCTION TO SECONDARY SCHOOL ALGEBRA –

- 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) **not covered in book**
E.g. $7x + 136 = 1018$
- **Factorising single brackets (up to expressions such as $4a^2 - 2a$) 6:1, 3:6**
- **Expanding double brackets 6:18 3:5**

THE YEAR EIGHT INTRODUCTION TO SECONDARY SCHOOL ALGEBRA –

- 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 **6:18 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) **not covered**
E.g. $7x + 136 = 1018$
- Factorising single brackets (up to expressions such as $4a^2 - 2a$) **6:1, 3:6**
- **Factorising into double brackets 6:19, 6:20 7:6**
- **Equations from shapes some of 3:14**
- **Solving linear equations including fractions 3:12,**
- **Factorising and solving quadratics (with no co-efficient of x^2) 6:21, 6:22**
- **Form and solve equations in other contexts than shapes**
- **Simultaneous Equations 6:28 (p.309), 6:30 (p.310)**

One week for revision

Modular test focussing on topics covered this half term

Corrections and revision of tricky topics

Christmas

DC2 – everything from before Christmas with a focus on the topics since DC1

Area, Perimeter and Angles

- 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*
- **Volume of cuboids 7:17,**
- **Angles in parallel lines 3:7**
- **Congruent shapes 3:16**

Area, Perimeter and Angles

- Revise areas of rectangles, squares and triangles **3:24, 3:25, 3:27** including areas and perimeters of simple compound shapes **3:26, , 3:30**
- **Area and circumference of a circle 7:11, 7:12, 7:13**
- **Volume 7:17, 7:18**
- Revise Angles **3:3, 3:5, 3:6,**
- **Angles in parallel lines 3:7, 3:8**
- **Using Pythagoras to find the hypotenuse 3:30**
- **Congruent shapes 3:16, 3:17**

Area, Perimeter and Angles

- Revise areas of rectangles, squares and triangles using number skills developed in first half term.
- 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). Focus on giving reason skills. **3:3, 3:5, 3:6,**
- Area and perimeter questions in context*
- **Area and circumference of a circle 7:11, 7:12, 7:13, 7:14**
- **Volume 7:17, 7:18**
- **Angles in parallel lines**
- **Pythagoras 3:30, 3:31, 3:32, 3:33**
- **Similar Shapes 3:16, 3:17, 4:29, 4:30**

<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 5:14 - Simple problems involving percentages*5:15, 5:16 	<p>Percentages</p> <ul style="list-style-type: none"> - Calculate percentages of amounts 5:11, - Calculate percentage increases and decreases of amounts 5:13, - Calculate numbers as percentages of other numbers (calculator allowed) - Problems involving percentages 5:15, 5:16 	<p>Revise Percentages</p> <ul style="list-style-type: none"> - Understand what a percentage is - Calculate percentages of amounts 5:11, - Calculate percentage increases and decreases of amounts 5:17, 5:18, 5:19, - Compound interest 5:23, - Find original amount 5:21, 5:22,
Half Term		

<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 by halving) 5:5 Q10 - 34 - Add and subtract simple fractions by writing out equivalents 5:9 - Multiply and divide simple fractions (no cross cancelling) 5:10 - Finding fractions of amounts 5:8 (No mixed numbers for this group at this stage) - Probability with fractions: writing probabilities with fractions 10:5 (p.436) 10:6 (p.439) 	<p>Fractions</p> <ul style="list-style-type: none"> - Simplifying fractions by finding a common factor (not by halving) 5:5 Q10 - 34, 1:15 - Convert between improper fractions and mixed numbers 5:6 - Add and subtract fractions by finding a common denominator 5:9, 1:16 - Multiply fractions (including mixed fractions and cross cancelling) 5:10 - Divide fractions (including mixed fractions and cross cancelling) 5:10, 1:17 Q3 - Finding fractions of amounts 5:8 - Mixed revision sheets on all of the above 1:16, 1:17 - Probability with fractions *Writing probabilities with fractions 10:5 (p.436) 10:6 (p.439) *Probabilities of independent events 10:9 (p.448) 	<p>Fractions</p> <ul style="list-style-type: none"> - Simplifying fractions by finding a common factor (not by halving) 5:5 Q10 -34, 1:15 - Convert between improper fractions and mixed numbers 5:6 - Add and subtract fractions by finding a common denominator 5:9, 1:16 - Multiply fractions (including mixed fractions and cross cancelling) 5:10 - Divide fractions (including mixed fractions and cross cancelling)) 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 using skills developed in this module - Simple algebraic fractions 7:18 (p.395) - Probability with fractions *Writing probabilities with fractions 10:5 (p.436) 10:6 (p.439) *Probabilities of independent events 10:9
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	<ul style="list-style-type: none"> - Solving linear equations including fractions e.g. $x/2+6=10$ 2:13 (p.77) 	<p>(p.448) *Tree Diagrams 10:10 (p.452). (Not the best introductory exercise – you may want to consider using your own worksheet)</p> <ul style="list-style-type: none"> - Solving linear equations including fractions 2:13 (p.77) revise from previous module 3:12,
<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. 1:4 - 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 - Metric and imperial units 9:5 and 9:6 (p.413) 	<p>Types of number</p> <ul style="list-style-type: none"> - Squaring, square rooting and cubing a number 1:4, 1:36, (Substitution has been studied last year so you can combine) - 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?) - Revise Pythagoras with square numbers - Metric and imperial units 9:5 and 9:6 (p.413) - Speed, distance, time 9:2 (p.409) - Density, mass and volume 9:3 (p.410) 	<p>Types of number</p> <ul style="list-style-type: none"> - Squaring, square rooting and cubing a number 1:4, 1:36, (Substitution has been studied last year so you can combine) - Defining factors, 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 - Fractional and negative powers 7:1 and 7:2 (p.368) - Revise Pythagoras with square numbers - Metric and imperial units 9:5 and 9:6 (p.413) - Speed, distance, time 9:2 (p.409) - Density, mass and volume 9:3 (p.410)
<p>One week for revision Modular test focussing on topics covered this half term</p>		
<p>Easter Holidays</p>		
<p>Ratio and proportion</p> <ul style="list-style-type: none"> - Understand ratio 5:24 	<p>Ratio and proportion</p> <ul style="list-style-type: none"> - Understand ratio 5:24 	<p>Ratio and proportion</p> <ul style="list-style-type: none"> - Understand ratio 5:24

<ul style="list-style-type: none"> - Simplify ratio 5:24 - Simple ratio problems using the Singapore bar method 5:25, 5:26 	<ul style="list-style-type: none"> - Simplify ratio 5:24 - Simple ratio problems using the Singapore bar method 5:25, 5:26 	<ul style="list-style-type: none"> - Simplify ratio 5:24 - Ratio problems 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, may need some simpler questions, 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. - Substituting into a very simple equation and then solving (hence using algebra work studied earlier in the year)* <p>-Simple linear graphs e.g. $y=x+1$, $y=2x$</p>	<p>Substitution</p> <ul style="list-style-type: none"> - Substituting into an expression 2:16, may need some simpler questions, 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)* - Drawing linear graphs by using the method of substitution (by simple substitution, not by using the method in the text book) 6:11 	<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. 2:19, 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 by using the method of substitution (by simple substitution, not by using the method in the text book) 6:11 - Draw quadratics and more difficult graphs 5:16 (p.291), 5:17 (p.292). - Be able to draw graphs using $y=mx+c$ 3:30 (p.140) 3:31 (p.141).
<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 and extension of difficult topics from the rest of the year.</p>		
<p style="text-align: center;">Statistics</p> <p>Pictograms Bar charts Scatter graphs Revise averages</p>	<p style="text-align: center;">Statistics</p> <p>Pictograms Bar charts Scatter graphs Revise averages including from a frequency table</p>	<p style="text-align: center;">Statistics</p> <p>Pictograms Bar charts Scatter graphs Revise averages including from a frequency table</p>

	Pie Charts	Pie Charts Pre-teaching topics from the year 9 scheme of work that it would be nice to have more time for and investigate fully. Suggested topics include: -Trigonometry
END OF ACADEMIC YEAR		