Year 10 Scheme of work

M α + π S At Upper Shirley High

Guidelines

- The purpose of this scheme of work is to build pupils towards an old style GCSE exam at the end of year 10 (see headings of different tiers on SOW).
- Pupils will be assessed during the year 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.
- This scheme of work is up for review at the end of the academic year to improve it ready for the next cohort. Please consider throughout the year which things you would like to change and be ready to discuss this in the summer term.
- The key to success for our students when using this SOW is constant revision of previous concepts. This should be done continuously through starters and 6 grids. This will allow tests to be cumulative (i.e. a test sat in Spring

Support	Core Aim: Take old Intermediate at	Extension
Aim: Take old	the end of year 10.	Aim: Take old GCSE Higher at end of
intermediate/foundation at the end		year 10. Minus redundant topics.
of year 10 (without covering all		
topics).		
General Revision of 4 Operations and	General Revision of 4 Operations and	General Revision of 4 Operations and
Applications of worded Questions	Applications of worded Questions	Applications of worded Questions
 Solving linear equations including unknowns on both sides (integer solutions only) 2:9, 2:10, 2:11, 2:12, 2:13, 2:14, 2:15, 3:8, 3:9, 3:10, 3:11, 3:12, 3.13, 3:14, 3:15 Expanding and simplifying single brackets, e.g. 3(x + 4) - 2(4x - 6) 2:5, 2:6, 3:4 Expanding double brackets with positive numbers only 6:18 Factorising single brackets 6:1 	 Solving linear equations including unknowns on both sides 2:9, 2:10, 2:11, 2:12, 2:13, 2:14, 2:15, 3:8, 3:9, 3:10, 3:11, 3:12, 3.13, 3:14, 3:15 Expanding and simplifying single brackets, e.g. 3(x + 4) - 2(4x - 6) 2:5, 2:6, 3:4 Expanding double brackets 6:18, 3:5 Factorising single brackets 6:1, 3:6 Factorising double brackets (no coefficient of x²) 6:19, 6:20, 7:6, 7:8 Solving linear simultaneous equations 6:28, 6:30, 6:31, 6:32, 3:38, 3:39, 3:40 Rearranging equations (but no need to factorise) 6:2, 6:3, 6:4, 6:5, 6:6, 5:4, 5:5, 5:4, 5:5, 5:5	 Solving linear simultaneous equations 6:28, 6:30, 6:31, 6:32, 3:38, 3:39, 3:40 Rearranging equations (including having to factorise) 6:2, 6:3, 6:4, 6:5, 6:6, 5:1, 5:2, 5:3, 5:4, 5:5, 5:6, 5:7 Factorising double brackets (with a coefficient of x²) 6:19, 6:20, 7:6, 7:7, 7:8 Solving quadratic equations (with a coefficient of x²) 7:9, 7:10 Use the quadratic formula to solve a quadratic equation 7:11, 7:12 Solving simultaneous equations involving a quadratic 3:41 Operations with algebraic fractions 7:18
CCSE Number Skille	5:1, 5:2, 5:3, 5:4, 5:7	CCSE Number Skille
 Product of prime factors, using a factor 	 Product of prime factors, using a factor 	 Revision of products of primes, LCM and

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 tree, expressed in index form 1:5 HCF 1:3, 1:13 LCM 1:3, 1:13 Convert a number expressed in standard form into an ordinary number 1:42 Q21-29. Express ordinary numbers in standard form 1:42 Q1-20, 2:17 Q1-24 Estimation, estimating a calculation by rounding to 1.s.f. (excluding decimal denominators). 5:39, 5:40 	 tree, expressed in index form 1:5, 1:12 HCF 1:3, 1:13 LCM 1:3, 1:13 Convert a number expressed in standard form into an ordinary number 1:42 Q21-29, 2:17 Q25-28 Express a number in standard form 1:42 Q1-20, 2:17 Q1-24 	 HCF 1:3, 1:5, 1:12, 1:13 Standard form including problems involving standard form 1:42, 1:43, 1:44, 2:17, 2:18, Estimation, estimating a calculation by rounding to 1.s.f. (including decimal denominators) 5:39, 5:40, 1:18, 1:19 Nth term – linear only 2:26, 2:27, 3:20, 3:21 Surds (simplifying, expanding brackets, simple rationalise the denominator) 7:3 Index laws (simple rules, fractional and negative powers) 7:1, 7:2, 7:4, 7:5 	
Circles	Circles	Sectors	
 Find the circumference (rounding to d.p and s.f.) 7:12, 4:16 Q1-7 Find the area of a circle (rounding to d.p and s.f.) 7:13, 4:16 Q8-12 	 Find the circumference (rounding to d.p and s.f.) 7:12, 4:16 Q1-7 Find the area of a circle (rounding to d.p and s.f.) 7:13, 4:16 Q8-12 Area and perimeter of semi-circles (rounding to d.p and s.f.) 7:14, 4:17 	 Find the perimeter of a sector (rounding to d.p and s.f.) 7:15, 7:16, 4:20, 4:21 Find the area of a sector (rounding to d.p and s.f.) 7:15, 7:16, 4:20, 4:21 	
	One week for:		
	1) Revision – a revision sheet will be available		
	DC1 – on everything covered so far		
Puthagoras Duthagoras Triangles			
 Find the hypotenuse (rounding to d.p and s.f.) 7:30 Find the length of a short side (rounding 	 Find the hypotenuse (rounding to d.p and s.f.) 7:30 Find the length of a short side (rounding 	 Pythagoras 7:30, 7:31, 7:32, 7:33, 4:10 Right angled triangles SOHCAHTOA 	
to d.p and s.f.) 7:31, 7:32, 7:33,	to d.p and s.f.) 7:31, 7:32, 7:33,	7:34, 7:35, 7:36, 7:38, 6:6, 6:7,	

 4:10 GCSE Algebraic Graphs Construct a linear graph from an 	 4:10 GCSE Algebraic Graphs Construct a linear graph from an 	 6:8, 6:9, 6:10 Sine rule 6:19, 6:20 Cosine rule 6:21, 6:22 ¹/₂ ab sin C 4:14 Q10 Area of a segment using knowledge from triangles topic (rounding to d.p and s.f.) 4:22 GCSE Algebraic Graphs Construct linear and quadratic graphs
 equation, with and without a calculator 6:10, 6:11, 6:12, 3:26 Q1-12. Construct a quadratic graph from an equation, with and without calculator (very basic ones only e.g. y = x² + 3) 6:25, 6:26, 5:16 	 equation, with and without a calculator 6:10, 6:11, 6:12, 3:26 Q1-12 Construct a quadratic graph from an equation, with and without a calculator 6:25, 6:26, 5:16 Draw simple conclusions from these graphs, e.g. find x when y=7 3:26 Q13-15 Basic understanding of y=mx+c (e.g. basic understanding of gradients and finding the y-intercept) 6:13, 6:14, 6:15, 3:29, 3:30 	 when given an equation 6:10, 6:11, 6:12, 6:25, 6:26, 3:26 Q1-12, 5:16 Draw simple conclusions from these graphs, e.g. find x when y = 7 3:26 Q13-15 y=mx+c (e.g. basic understanding of gradients and finding the y-intercept) 6:13, 6:14, 6:15, 3:29, 3:30, 3:31
GCSE Inequalities	GCSE Inequalities	GCSE Inequalities
 Represent inequalities on a number line 6:7, 5:8 	 Represent inequalities on a number line 6:7, 5:8 	 Represent inequalities on a number line 6:7, 5:8
 Write a list of numbers that satisfy an inequality. 	 Write a list of numbers that satisfy an inequality. 	 Write a list of numbers that satisfy an inequality.
 Solve an inequality, not including unknowns on both sides 6:8 Q1-9, 5:9 Q1-9 	 Solve an inequality, including unknowns on both sides 6:8, 6:9, 5:9, 5:10 Define simple regions on a set of axes 	 Solve an inequality, including unknowns on both sides 6:8, 6:9, 5:9, 5:10 Define regions on a set of axes (e.g. x >
~ ~ ~	(e.g. x > 0, y < 1 and y > x + 1) 5:12	0, v < 1 and v > x + 1 5:12

	 Estimation, estimating a calculation by rounding to 1.s.f. (including decimal denominators) 5:39, 5:40, 1:18, 1:19 	
	Christmas	1
GCSE Percentages	GCSE Percentages	GCSE Percentages
 Calculate percentage increase and decrease with and without a calculator 5:14, 5:15, 5:16, 2:4, 2:5 	 Calculate percentage increase and decrease with and without a calculator 5:14, 5:15, 5:16, 2:4, 2:5 Calculate compound interest and depreciation, with and without a calculator 5:20, 5:23, 2:9 Calculate reverse percentages with and without a calculator 5:21, 5:22, 2:8 	 Calculate percentage increase and decrease with and without a calculator 5:14, 5:15, 5:16, 2:4, 2:5 Calculate compound interest and depreciation, with and without a calculator 5:20, 5:23, 2:9 Calculate reverse percentages with and without a calculator 5:21, 5:22, 2:8
	Revision	
	DC2 – on everything covered so far this year	
 Revise basic angles facts: angles in a triangle and quadrilateral, on a straight line, around a point 3:5, 3:6 Interior and exterior angles of regular polygons 7:26, 7:27 Find angles in parallel lines with reasons 3:7, 4:1 	 Revise basic angles facts 3:5, 3:6 Interior and exterior angles of polygons, both irregular and interior angles 7:26, 7:27, 4:4 Find angles in parallel lines with reasons 3:7, 3:8, 4:1 Forming and solving equations from shapes, with angles and perimeter Simple circle theorems (no alternate segment theorem and no complicated 	 Interior and exterior angles of polygons, both irregular and interior angles 7:26, 7:27, 4:4 Find angles in parallel lines with reasons 3:7, 3:8, 4:1 Forming and solving equations from shapes. Including 'show that' questions Circle theorems (including alternate segment theorem and combinations) 6:23, 6:24, 6:25, 6:26

	combinations) 6:23, 6:24	
 GCSE Linear Sequences Continue a sequence 2:23, 2:24 Find the first 5 terms from a given expression Generate the nth term for a linear sequence 2:26, 2:27, 3:20 	 GCSE Linear Sequences Find the first 5 terms from a given expression Generate the nth term for a linear sequence 2:26, 2:27, 3:20, 3:21 Verifying if a term would be in a sequence / find any given term in the sequence 	 GCSE Vectors Representing a simple vector 7:10, 6:15 Vectors questions that involve ratios 6:16 Demonstrating using vectors that lines are parallel or straight
GCSE Transformations - Perform each of the 4 transformations (not including negative and fractional enlargements or needing to describe the transformation) 7:1, 7:2, 7:3, 7:4, 7:6, 7:7, 6:12	 GCSE Transformations Perform each of the 4 transformations (not including negative and fractional scale factors for enlargement) 6:13 Q2-4,6&8 Describe each of the 4 transformations 7:5, 7:9, 6:13 Q1 	 GCSE Transformations Perform each of the 4 transformations (including negative and fractional scale factors for enlargement) 6:13 Q2-11 Describe each of the 4 transformations 7:5, 7:9, 6:13 Q1,12-16
	Half Term (no test)	
 GCSE Area and Perimeter Find the area and perimeter of simple shapes: rectangles, squares and triangles 3:25, 3:27 Q1-7, 3:30 Q1-6 Find the area and perimeter of basic compound shapes 3:26, 3:27 Q8-16, 3:30 Q7-14 	 GCSE Similar Shapes Find the scale factor for two similar shapes Use scale factor to find missing length on either of the two similar shapes (that are represented separately) 4:29 Q1-13 	 GCSE Similar Shapes Find the scale factor for two similar shapes Use scale factor to find missing length on either of the two similar shapes 4:29 Q1-13 Questions involving scale factor with area and volume (e.g. The volume of cube B is 30cm² and of cube a is 120 cm². If the height of cube A is 50 cm, find the height of cube B 4:31, 4:32
Fractions	Fractions	Fractions
- Simplifying fractions by finding a common	- Simplifying fractions by finding a common	- Simplifying fractions by finding a common

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 factor (not by halving) 5:5 Q10 -34 Add and subtract fractions by finding a common denominator 5:9 Multiply (no mixed numbers) 5:10 Divide fractions (no mixed numbers) 5:10, Finding fractions of amounts 5:8 Mixed revision on all of the above GCSE Trigonometry Find unknown sides of right angled triangles (rounding to d.p and s.f.) 7:34, 	 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 GCSE Trigonometry Find unknown sides of right angled triangles (rounding to d.p and s.f.) 7:34, 	 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 GCSE Direct and Inverse Proportion Answer general GCSE questions involving direct and inverse proportion 5:31,
 7:35, 7:36, 6:5, 6:6, 6:7 Find unknown angles of right angled triangles (rounding to d.p and s.f.) 7:37, 6:8 	 7:35, 7:36, 6:5, 6:6, 6:7 Find unknown angles of right angled triangles (rounding to d.p and s.f.) 7:37, 6:8 	 5:32, 5:33 Answer proportion questions involving squares and cubes 5:13, 5:14
GCSE Surface Area and Volume	GCSE Surface Area and Volume	GCSE Surface Area and Volume
 Find the volume of prisms, not including cylinders or simple compound prisms 7:17 Find the surface area of prisms (not including cylinders or compound prisms) 7:17 	 Find the volume of prisms, including cylinders and simple compound prisms (rounding to d.p and s.f.) 7:17, 7:18, 4:23, 4:24 Q1-8 Find the surface area of prisms (not including cylinders or compound prisms) 7:17, 7:18, 4:23, 4:24 Q1-8 	 Find the volume of prisms, including cylinders and simple compound prisms (rounding to d.p and s.f.) 7:17, 7:18, 4:23, 4:24 Q1-8 Find the surface area of prisms (not including cylinders or compound prisms) 7:17, 7:18, 4:23, 4:24 Q1-8

		 Find the volume of cones and spheres 4:26, 4:27 	
GCSE Averages - General revision of mean, median, mode and range 4:5 4:6 4:7 4:8 4:9	GCSE Averages - Calculate averages from discrete data represented in a frequency table 4:10	GCSE Averages - Calculate averages from discrete data represented in a frequency table 4:10	
8:3	4:11, 8:4, 8:5	4:11, 8:4, 8:5	
 Calculate averages from discrete data represented in a frequency table 	 Calculate averages from continuous data 	 Calculate averages from continuous data 	
Easter Holidays			
Revision			
	DC3		
GCSE Pie Charts	GCSE Pie Charts	GCSE Histograms	
 Construct a pie chart from a frequency table 4:16 Q1-2 	 Construct a pie chart from a frequency table 4:16 Q1-2 	 Construct a histogram from a frequency table 4:10 	
 Construct a pie chart from a frequency table 4:16 Q1-2 Comparison and interpretation of pie charts 4:15 03-5 	 Construct a pie chart from a frequency table 4:16 Q1-2 Comparison and interpretation of pie charts 4:15 03-5, 8:2 08-14 	 Construct a histogram from a frequency table 4:10 Calculate frequency from a histogram 4:11 	
 Construct a pie chart from a frequency table 4:16 Q1-2 Comparison and interpretation of pie charts 4:15 Q3-5 	 Construct a pie chart from a frequency table 4:16 Q1-2 Comparison and interpretation of pie charts 4:15 Q3-5, 8:2 Q8-14 	 Construct a histogram from a frequency table 4:10 Calculate frequency from a histogram 4:11 Interpret information displayed on a histogram (e.g. how many cars were travelling faster than 40 mph?) 	
 Construct a pie chart from a frequency table 4:16 Q1-2 Comparison and interpretation of pie charts 4:15 Q3-5 	 Construct a pie chart from a frequency table 4:16 Q1-2 Comparison and interpretation of pie charts 4:15 Q3-5, 8:2 Q8-14 GCSE Cumulative Frequency 	 Construct a histogram from a frequency table 4:10 Calculate frequency from a histogram 4:11 Interpret information displayed on a histogram (e.g. how many cars were travelling faster than 40 mph?) GCSE Cumulative Frequency 	
 Construct a pie chart from a frequency table 4:16 Q1-2 Comparison and interpretation of pie charts 4:15 Q3-5 GCSE Cumulative Frequency Construct a cumulative frequency 	 Construct a pie chart from a frequency table 4:16 Q1-2 Comparison and interpretation of pie charts 4:15 Q3-5, 8:2 Q8-14 GCSE Cumulative Frequency Construct a cumulative frequency 	 Construct a histogram from a frequency table 4:10 Calculate frequency from a histogram 4:11 Interpret information displayed on a histogram (e.g. how many cars were travelling faster than 40 mph?) GCSE Cumulative Frequency Construct a cumulative frequency 	
 Construct a pie chart from a frequency table 4:16 Q1-2 Comparison and interpretation of pie charts 4:15 Q3-5 GCSE Cumulative Frequency Construct a cumulative frequency diagram from a frequency table 8:13 	 Construct a pie chart from a frequency table 4:16 Q1-2 Comparison and interpretation of pie charts 4:15 Q3-5, 8:2 Q8-14 GCSE Cumulative Frequency Construct a cumulative frequency diagram from a frequency table 8:13 	 Construct a histogram from a frequency table 4:10 Calculate frequency from a histogram 4:11 Interpret information displayed on a histogram (e.g. how many cars were travelling faster than 40 mph?) GCSE Cumulative Frequency Construct a cumulative frequency diagram from a frequency table 8:13 	
 Construct a pie chart from a frequency table 4:16 Q1-2 Comparison and interpretation of pie charts 4:15 Q3-5 GCSE Cumulative Frequency Construct a cumulative frequency diagram from a frequency table 8:13 Q4a, 5a, 6a, 7a, 8a 	 Construct a pie chart from a frequency table 4:16 Q1-2 Comparison and interpretation of pie charts 4:15 Q3-5, 8:2 Q8-14 GCSE Cumulative Frequency Construct a cumulative frequency diagram from a frequency table 8:13 Q4a, 5a, 6a, 7a, 8a 	 Construct a histogram from a frequency table 4:10 Calculate frequency from a histogram 4:11 Interpret information displayed on a histogram (e.g. how many cars were travelling faster than 40 mph?) GCSE Cumulative Frequency Construct a cumulative frequency diagram from a frequency table 8:13 Q4a, 5a, 6a, 7a, 8a 	
 Construct a pie chart from a frequency table 4:16 Q1-2 Comparison and interpretation of pie charts 4:15 Q3-5 GCSE Cumulative Frequency Construct a cumulative frequency diagram from a frequency table 8:13 Q4a, 5a, 6a, 7a, 8a Estimate the median from the cumulative 	 Construct a pie chart from a frequency table 4:16 Q1-2 Comparison and interpretation of pie charts 4:15 Q3-5, 8:2 Q8-14 GCSE Cumulative Frequency Construct a cumulative frequency diagram from a frequency table 8:13 Q4a, 5a, 6a, 7a, 8a Estimate the median from the cumulative 	 Construct a histogram from a frequency table 4:10 Calculate frequency from a histogram 4:11 Interpret information displayed on a histogram (e.g. how many cars were travelling faster than 40 mph?) GCSE Cumulative Frequency Construct a cumulative frequency diagram from a frequency table 8:13 Q4a, 5a, 6a, 7a, 8a Estimate the median from the cumulative 	

	 Calculate quartiles and interquartile range 8:13 Q8c Use the skills above to construct a box plot from the cumulative frequency graph 4:12 	 Calculate quartiles and interquartile range 8:13 Q8c Use the skills above to construct a box plot from the cumulative frequency graph 4:12
GCSE Bearings	GCSE Bearings	GCSE Bounds
- Accurately measure a bearing 7:22	- Accurately measure a bearing 7:22	- Identify the upper and lower bound for a
 Construct a bearing when given 	- Construct a bearing when given	variable 2:28
information 7:23, 7:24	information 7:23, 7:24	 Understand how to use upper and lower
	- Determine bearing from B when bearing	bounds within equations 2:29
	from A is given	
GCSE Probability	GCSE Probability	GCSE Probability
 General understanding of probability adding up to 1 10:8 Simple probability questions (e.g. the probability of picking a yellow bead form a bag containing 10:5, 10:6, 9:4 	 Complete a probability tree 10:2, 9:2 Use a probability tree to answer simple problems (e.g. probability of failing your driving test twice) 10:10, 10:11, 9:9, 9:10 Calculating expected frequency when given probability (e.g. Tom attempts to score a goal 50 times, if his probability of success is 0.4 how many goals should he expect to score?) 10:4, 9:5 Booklet Revision 	 Complete a probability tree 10:2, 9:2 Use a probability tree to answer simple problems (e.g. probability of failing your driving test twice) 10:10, 10:11, 9:9, 9:10 Calculating expected frequency when given probability (e.g. Tom attempts to score a goal 50 times, if his probability of success is 0.4 how many goals should he expect to score?) 10:4, 9:5
* Start sell	ing booklets several weeks before half term to ensu	ure uptake.
Half Term (no test)		
GCSE Small Topics	GCSE Booklet Revision	GCSE Booklet Revision
- Construct a stem and leaf diagram 4:20,	During this time students should focus on their	During this time students should focus on their
8:8	cover the following	cover the following
 Interpret a stem and leaf diagram 4:20, 4:21, 8:9 	- Construct a stem and leaf diagram 4:20, 8:8	 Understanding speed, for example that 60mph = 60 miles in 1 hour

END OF ACADEMIC YEAR		
		 Algebraic proof of recurring decimals Trigonometric graphs
		Transformations of graphs
	2) Start year 11 scheme of work	
1) Recap topics that were not done well in the end of year exam		
	Teacher decision:	
	End of Year Exam (dates to be confirmed)	
	volume (e.g. 8cm ² =mm ²) 9:5	
	 Converting units involving area and 	
	- Simple construction (angle bisector and perpendicular bisector) 3:15 , 4:7	 Stratified sampling
	 Using formulae speed = distance ÷ time 9:2, 2:26 	 Converting units involving area and volume (e.g. 8cm²=mm²) 9:5
	 Understanding speed, for example that 60mph = 60 miles in 1 hour 	 Simple construction (angle bisector and perpendicular bisector) 3:15, 4:7
	 Interpret a stem and leaf diagram 4:20, 4:21, 8:9 	 Using formulae speed = distance ÷ time 9:2, 2:26