Subject: MATHS	White Rose Maths Year 6/ 7	OUR TOPIC: Algebraic Reasoning
Class: V2 Josh	Teacher: Jacqui Shepherd	Term: Weeks 1-5 Autumn Term 1
Key Vocabulary: Integer Expression Function machine Algebra Formulae	Alternative Learning Environments	Resources: Pencils, Rulers, Rubbers, White Rose scheme resources, white board, base 10 cheese, cubes Pupil specific activities at the beginning of each lesson on board including lesson descriptor rules and/or formula

Learning Intentions.					
Current Unit –	Prior Learning –	Future Learning –			
Year 6 - Spring Block 6 – Algebra	Percentages Fractions Decimals Addition Subtraction BIDMAS	SOLVING AND BALANCING EQUATIONS SUBSTITUTION IN FORMULAE			
Geometry: Position and direction : The first quadrant Four quadrents Translations Reflections	Names of 2 d and 3d shape Types of triangle Co-ordinates First quadrant on a graph	Positive and negative Bearings			
Recap – BIDMAS					

Students missed learning due to Covid so will complete this section of work to support future learning.

Pupil Asset Milestones to be achieved:

Stage: 6 Find a rule – one and two step function Machines Find a rule – two step Problem solving numerical inputs Forming Expressions one and two step function machines – simple algebraic inputs Conventions when writing algebraic expressions Substitution – substitute simple expression to find particular value link concept of function machine. Formulae – substitute into familiar formulae e.g Area, volume. Reasoning and problem solving with formulae Forming equations – know difference between expression and an equation Reasoning and problem solving with Equations One-step equations - solve simple equations involving 4 operation One-step equations – problem solving Two-step equations – balance and solve Two-step equations – reasoning and problem solving Finding pairs of values – use of substitution (focus integer values) Finding pairs of values - Reasoning and problem solving 1 and 2

Geometry: Position and direction : The first quadrent Four quadrents Translations Reflections

LINK TO PUPIL ASSET OBJECTIVES FOR LEVELS

Week	Session 1	Session 2	Session 3	Session 4
1				Lesson Objective Introduction to expectations and terms work. Vocabulary for maths – algebra
				Activities
	Lesson Objective:	Lesson Objective	Lesson Objective	Lesson Objective
2	Recap. Develop independent working skills, thought, problem solving. Alongside developing mental maths skills and rehearsing number bonds YR6 - SP BLOCK 3 Find a rule – one step	Algebra – Function machine White Rose Maths Stage 6 sP Block 3 Algebra : Find a rule – 2step Encourage children to refer to the order of operations to help them understand why the	Algebra – forming expressions White Rose Maths Stage 6 spring 6 Algebra Forming Expressions one and two step function machines – simple algebraic inputs Conventions when writing algebraic expressions	Stage 6 students: Algebraic Formula challenges on board Maths Test – 20 questions all topics revision
	Reasoning and problem solving Activities:	outputs are different.	In this step, children use simple algebraic inputs e.g. y. Using	Activities
	20 questions on board relating to topic differentiated for all students	Activities Teaching Slides as resource WS	these inputs in a function machine leads them to forming expressions e.g. $y + 4$. The use of cubes to	board regarding algebra function machines.
		For all students RECAP BIDMAS	represent a variable can aid understanding. Children are	Times tables/ number bonds/ BIDMAS test and recap.

	Students completing activities		introduced to conventions that we	
	with a range of concrete	Needed to revise inverse	use when writing algebraic	
	materials as required. WS	operations	use when writing argeoraic	
		Relationships between multiply	expressions. e.g. $y \times 4$ as $4y$.	
	Peer support - working in set	and divide, addition and		
	reel support – working in set	and divide, datafion and		
	groups with stall support.	subiraction	Activities	
			Teaching Slides as resource	
			White Rose worksheets as above	
	Lesson Objective: Substitution -	Lesson Objective Formulae -	Lesson Objective Reasoning and	Lesson Objective
				Lesson Objective
3	substitute simple expression to	substitute into familiar formulae	problem solving with formulae	
°	find particular value link concept	e.g Area, volume.		White Rose Maths
	of function machine.			Stage 6 students: Algebraic
			White Rose Maths	Formula challenges on board
	White Rose Maths	White Rose Maths	Stage 6 spring 6	
	Change C and D Diagle 2. Algebras			
	Stage 6 SP Block 3 Algebra :	Stage 6 spring 6		Activities
	Recap confirm understanding of	Activities		Additional plenary questions on
	previous weeks topics, develop	Teaching Slides as resource	Activities	board regarding algebra function
	independent working skills,	Introduce topic		machines.
	thought, problem solving.	Children substitute into familiar	White Rose worksheets as above	
	Alongside developing mental	formulae such as those for area		Times tables/ number bonds/
	maths skills and rehearsing	and volume. They also use simple		BIDMAS test and recan
				biblings test and recap.
	number bonds	formulae to work out values of	Students completing activities	
	Children substitute into simple	everyday activities such as the	with a range of concrete	Weekly plenary questions on
	expressions to find a particular	cost of a taxi or the amount of	materials as required. WS	board from all levels to give
	value. They have already	medicine to take given a person's		opportunity to improve and
	experienced inputting into a	age.	Peer support – working in set	develop knowledge and
	function machine, and teachers	-8	groups with staff support	understanding: incorporating
	can make the links between these	All students will be siven this test	Broaps with stan support.	and standing, incorporating
		An students will be given this task		
	two concepts. Children will need	assisted where required.	RW- Work with IA – basic area.	real-world applications and
	to understand that the same	Special awareness and perception	Develop his confidence with	examples for all students
	expression can have different	are qualities that all students are	multiplying and working with the	combining themes
			concepts. Use cubes.	

	values depending on what has	developing and is important as		
	been substituted.	such.		
		Assisted with physical (concrete)		
	Activities:	and pictorial resources.		
	20 questions on board relating to			
	topic differentiated for all	RW- Work with TA – basic area.		
	students	Develop his confidence with		
		multiplying and working with the		
	Students completing activities	concepts. Use cubes.		
	with a range of concrete			
	materials as required.			
	Peer support – working in set			
	groups with staff support.			
	Lesson Objective Reasoning and	Lesson Objective: One-step	Lesson Objective: One-step	Lesson Objective
	problem solving with formulae	equations – solve simple	equations – solve simple	
4		equations involving 4 operation	equations involving 4 operation	Stage 6 students: Algebraic
		White Rose Maths	White Rose Maths	Formula challenges on board
	White Rose Maths	Stage 6 spring 6 Algebra	Stage 6 spring 6 Algebra	
	Stage 6 spring 6			
		Recap confirm understanding of	Recap confirm understanding of	
	Review previous learning on	previous weeks topics, develop	previous weeks topics, develop	
	Algebra. Ensure understanding	independent working skills,	independent working skills,	
	of concepts before moving on	thought, problem solving.	thought, problem solving.	
		Alongside developing mental	Alongside developing mental	Activities
	Activities	maths skills and rehearsing	maths skills and rehearsing	
		number bonds	number bonds	Additional plenary questions on
	White Rose worksheets as above	Children solve simple one step	Children solve simple one step	board regarding algebra function
		equations involving the four	equations involving the four	machines., finding pairs of values
		operations. Children should	operations. Children should	
	Students completing activities	explore this through the use of	explore this through the use of	Times tables/ number bonds/
	with a range of concrete	concrete materials such as cubes,	concrete materials such as cubes,	BIDMAS test and recap.
	materials as required. WS	counters and cups. Pupils learn to	counters and cups. Pupils learn to	
		solve equations using a balancing	solve equations using a balancing	Challenge: exam style questions
		method using inverse operations.	method using inverse operations.	for KT, BS

	Peer support – working in set			
	groups with staff support.	Activities:	Activities:	
		Students completing activities	Students completing activities	
		with a range of concrete	with a range of concrete	
		materials as required Teaching	materials as required Teaching	
		Slides as resource with additional	Slides as resource with additional	
		resources for addition	resources for addition	
		multiplication as required	multiplication as required	
		Peer support – working in set	Peer support – working in set	
		groups with staff support.	groups with staff support.	
	Lesson Objective Two-step	Lesson Objective Two-step	Lesson Objective Two-step	Lesson Objective
5	equations – reasoning and	equations – reasoning and	equations – reasoning and	
5	problem solving	problem solving	problem solving	White Rose Maths
	Finding pairs of values – use of	Finding pairs of values – use of	Finding pairs of values – use of	Stage 6 students: Algebraic
	substitution (focus integer values)	substitution (focus integer values)	substitution (focus integer values)	Formula challenges on board
	White Rose Maths			Activities
	Stage 6 spring 6 Algebra	White Rose Maths	White Rose Maths	
	Some pupils progress from	Stage 6 spring 6 Algebra	Stage 6 spring 6 Algebra	Additional plenary questions on
	solving equations that require			board regarding algebra function
	one-step to equations that		Exam style questions students to	machines.
	require two steps. Pupils should		explain why and how they found	
	think of each equation as a		the answers	Times tables/ number bonds/
	balance and solve it through	Activities	Peer teaching	BIDMAS test and recap.
	doing the same thing to each side			
	of the equation. This should be	White Rose worksheets as above		Weekly plenary questions on
	introduced using concrete and			board from all levels to give
	pictorial methods alongside the		Activities	opportunity to improve and
	abstract notation as shown. Only	Recap and ensure understanding		develop knowledge and
	when secure in their	of previous lessons objectives.	White Rose worksheets as above	understanding; incorporating
	understanding should children try			extension activities and further
	this without the support of bar	Teaching Slides as resource		real-world applications and
		Introduce topic		

models or similar	With additional resources for	Recap and ensure understanding	examples for all students
representations.	addition multiplication as	of previous lessons objectives.	combining themes
	required.		
Activities	Board work	Teaching Slides as resource	
	Peer support – working in set	Introduce topic	
Teaching Slides as resource	groups with staff support.	With additional resources for	
Introduce topic		addition multiplication as	
With additional resources for		required.	
addition multiplication as		Board work	
required.		Peer support – working in set	
Board work		groups with staff support.	
Peer support – working in set			
groups with staff support.			
Lesson Objective Finding pairs of	Lesson Objective Finding pairs of	Lesson Objective: Finding pairs of	
values – Reasoning and problem	values – Reasoning and problem	values – Reasoning and problem	Lesson objective: applying
solving 1and 2	solving 1and 2	solving 1and 2	algebra in real world situations.
Inset day; working a day behind	Children use their understanding		
Recap confirm understanding of	of substitution to consider	Activities:	Activities:
previous weeks topics, develop	what possible values a pair of	Pupils confirm understanding of	
independent working skills,	variables can take.	previous weeks topics, develop	Some: Problem solving and
thought, problem solving.	focus on integer values, but	independent working skills,	independent working.
Alongside developing mental	other	thought, problem solving.	
maths skills and rehearsing	solutions could be a point for	Alongside developing mental	
number bonds	discussion.	maths skills and rehearsing	Students completing activities
White Rose Maths	Pupils can find values by trial and	number bonds	with a range of concrete
Stage 6 spring 6 Algebra	improvement, but should be		materials as required
Children use their understanding	encouraged to work	leaching Slides as resource	D
of substitution to consider	systematically.	Introduce topic	Peer support – working in set
what possible values a pair of	Activities	With additional resources for	groups with staff support.
variables can take.		addition multiplication as	
Tocus on integer values, but	with additional resources for	required.	
otner	addition multiplication as	Board Work	End of topic test
solutions could be a point for	required.	Peer support – working in set	
aiscussion.	Roard Work	groups with staff support.	

	Pupils can find values by trial and	Peer support – working in set		
	improvement, but should be	groups with staff support.	Students completing activities	
	encouraged to work		with a range of concrete	
	systematically.		materials as required	
		Pupils to complete treasure map/		
	Activities	domino line of algebraic	Peer support – working in set	
		questions	groups with staff support.	
	With additional resources for			
	addition multiplication as			
	required.			
	Board work			
	Peer support – working in set			
	groups with staff support.			
7	Lesson Objective	Lesson Objective	Lesson Objective: First Quadrent	
	Review of Shape	To recognise and understand	Reasoning and problem solving	Lesson objective: Times tables
	Identify names of 2 d shapes	term First Quadrent		and shapes test
			Activities:	
	Activities	Activities	Starter: review terminology	Activities:
	Students to id 2d shapes		Name of shapes,	
	Id key features of triangles and	Starter: Name that shape	Order of plotting	Some: Problem solving and
	names for different triangles			independent working.
	Review terms : length, width,	Recap work from prev year –	Complete plotting of co-	
	base, height.	reading and plotting co-ordinates.	ordinates	
	All: id 2d shapes, basic area and		Worksheets to be completed.	Students completing activities
	perimeter	Use of worksheets – reading and		with a range of concrete
	Some: review working out area of	mapping co-ordinates (under the	Teaching Slides as resource	materials as required
	triangles	sea co-ordinate sheet)	Introduce topic	
	Few: to work out area of triangle		With additional resources as	Peer support – working in set
		Ploting co-ordinates. Draw 2d	required.	groups with staff support.
	With additional resources for	shape on grid from given co-	Board work	
	addition multiplication as	ordinates.	Peer support – working in set	
	required.	Which axis do we look at first?	groups with staff support.	
	Board work	Draw co-ordinates in first		
	Peer support – working in set	quadrent and use ruler to join –		
	groups with staff support.	describe shape to partner.		

	Calculators (only use so students focus on formulae)	With additional resources for addition multiplication as required. Board work Peer support – working in set groups with staff support.	Students completing activities with a range of concrete materials as required Peer support – working in set groups with staff support.	
8	Lesson Objective: Four Quadrent	Lesson Objective: Four	Lesson Objective: Four	Lesson objective: Completion of
	Reasoning and problem solving	Quadrent:	Quadrent:	end of topic test.
	Activitios	Proceeding and problem colving	Reflections	Activitios
	Starter: review terminology	Reasoning and problem solving		Activities.
	Name of shapes,	Activities:	Activities:	Some: Problem solving and
	Order of plotting	Starter: review terminology	Starter: review terminology	independent working.
	Negative	Order of plotting	Order of plotting	
		Negative	Negative	
	Complete plotting of co-			Students completing activities
	ordinates with negatives	Complete plotting of co-	Complete plotting of co-	with a range of concrete
	Worksheets to be completed.	ordinates with negatives	ordinates with negatives	materials as required
		Worksheets to be completed.	Worksheets to be completed.	Deen suggest sugging in east
	leaching Slides as resource	Tapahing Clides as recourse	Where does the mirror line go?	Peer support – working in set
	With additional resources as	Introduce tonic	Which axis? How does reflecting	groups with stall support.
	required	With additional resources as	differ from translation?	
	Board work	required.		End of topic test
	Peer support – working in set	Board work	Teaching Slides as resource	·
	groups with staff support.	Peer support – working in set	Introduce topic	
		groups with staff support.	With additional resources as	
	Students completing activities		required.	
	with a range of concrete	Students completing activities	Board work	
	materials as required	with a range of concrete	Peer support – working in set	
		materials as required	groups with staff support.	

	Peer support – working in set groups with staff support.	Peer support – working in set groups with staff support.	Students completing activities with a range of concrete materials as required Peer support – working in set groups with staff support.	
Evaluation				