KS3 'Stages of Excellence': Maths

	Year 7	Year 8	
4.Extending	 ALGEBRA Simplify algebraic fractions, using factorising and cancelling. Solve complex algebrac equations, with unknowns on both sides GEOMETRY AND MEASURE Calculate and interpret gradients and intercepts of graphs of linear equations of the form y = mx +c. Develop methods for effective problem solving. NUMBER Write decimals in the form A x 10ⁿ. Write negative powers of ten. Write positive integers in the form A x 10ⁿ. RATIO AND PROPORTION Apply basic addition and subtraction methods. Recognise and perform calculations using powers of 10. PROBABILITY AND STATISTICS Input data into a frequency table. Solve problems involving averages and range. Use systematic listing to display outcomes of a set. 	 ALGEBRA Rearrange an expression to find different unknowns involving powers. Understand powers and laws of indices in complex equations. Change the subject of a complex formula. GEOMETRY AND MEASURE Understand the properties of similar shapes. Convert volume units. Identify the different types of angles formed by parallel lines and a transversal. Calculate the surface area and volume of 3D solids. NUMBER Select appropriate method for calculations involving fractions. Use rounding to estimate a solution. Recognise what is meant by prime factorisation and justify an appropriate method to determine the HCF and LCM. Calculate percentage increase and decrease problems. Calculate percentage increase and decrease problems. Understand and apply a multiplier. RATIO AND PROPORTION Perform calculations involving ratio. Understand the relationship between variables which are directly or inversely proportional. Understand the relationship between variables which are directly proportional. PROBABILITY AND STATISTICS Understand the relationship between relative frequency and theoretical probability. Interpret and compare frequency diagrams. Understand what is meant by union and intersection of a Venn Diagram. 	 ALGEBRA Change the subjet Solve a pair of sim Develop reasonin Approximate solu Work out gradier Explore proofs of Use Pythagoras th Understand graph GEOMETRY AND MEASU Work out the volu Work out the sur Enlarge shapes by Develop an unde Accurately descriftactor. NUMBER Work out repeate Understand percent Calculate percent Understand and a RATIO AND PROPORTION Justify appropriate -Use mathematic worded ratio). PROBABILITY AND STATISTICS Construct a tree of Understand set n Construct a tree of Understand set n
3.Secure	 ALGEBRA Use multiplicative methods to expand double brackets. Form and solve linear inequalities Identify key features of a linear graphs including gradient and y-intercept. GEOMETRY AND MEASURE Measure angles and lengths accurately. Convert metric units of length. Understand what is meant my parallel. Calculate the areas of basic and compound shapes. 	 ALGEBRA Recognise and use notation for powers and roots. Use knowledge of powers and roots to estimate and solve. Use multiplicative methods to expand double brackets. Form and solve linear inequalities Identify key features of a linear graphs including gradient and y-intercept. GEOMETRY AND MEASURE Convert area units. -Calculate the area complex 2D shapes including, of trapezia, parallelograms and circles. 	 ALGEBRA Recognise the nth quadratic sequen Factorise quadratic Describe the nth Solve one step alg Form basic algebra GEOMETRY AND MEASU Convert volume u Develop an under Accurately descrifactor.

Year 9

- ect of a complex formula.
- multaneous equations graphically.
- ng methods for effective problem solving.
- utions to algebraic equations using graphs.
- nts of perpendicular lines.
- f Pythagoras theorem.
- heorem in 3-d shapes.
- phical solutions to simultaneous equations.
- JRE
- umes of cones, spheres and complex shapes.
- rface area of any prism.
- y negative scale factors.
- erstanding of the trigonometric ratios.
- ibe and draw enlargement using a fractional scale
- ed percentage change
- entage change with and without a calculator.
- tage increase and decrease problems.
- apply a multiplier.
- Ν
- te methods using reasoning skills.
- cal methods in real life problems (best buys,
- ISTICS
- diagram to solve probability problems.
- notation.
- diagram to solve probability problems.
- notation.

th term for non-linear sequences including nces.

- tics for x 2 coefficients equal to one.
- term for a sequence.
- lgebraic calculations using bar models.
- oraic expressions.
- JRE
- units
- erstanding of the trigonometric ratios.
- ibe and draw enlargement using a fractional scale

	 Find the order of rotational symmetry for 		0	Calculate the surface area and volume of 3D solids.		 Work out the st
	regular shapes.	•	NUME	BER	•	NUMBER
	• NUMBER		0	Calculate percentage increase and decrease problems.		• Work out repea
	 Recognise what is meant by prime 		0	Understand and apply a multiplier.		 Understand per
	factorisation and justify an appropriate		0	Understand the relationship between variables which are		 Understand and
	method to determine the HCE and ICM		0	directly proportional		 Recognise and c
	 Calculate simple percentage increase and 		βΔΤΙΟ			 Understand the
	decrease problems			Perform more complex calculations involving two part		or inversely pro
			0	and three part ratios		
	KATIO AND PROPORTION Linderstand and Recognice ratio notation		-	and three-part ratios.	•	ATTO AND PROPORTIC
	 Onderstand and Recognise facto notation Use multiplicative reasoning when performing 		0	bar models)		o onderstand the
	O Use multiplicative reasoning when performing					
		•	PROBA			o Use multiplicati
	PROBABILITY AND STATISTICS		0	Describe correlation from a scatter graph.		models).
	 Input data into a frequency table. 		0	Understand the relationship between relative frequency	•	PROBABILITY AND STAT
	 Solve problems involving averages and range. 			and theoretical probability.		 Understand the
	 Use systematic listing to display outcomes of 					theoretical prot
	a set.					 Draw an accura
						 Calculate the es
						 Understand what
						Diagram.
	ALGEBRA	•	ALGEB	RA	•	ALGEBRA
	 Use multiplicative methods to expand double 		0	Recognise the nth term for non-linear sequences		 Rearrange an ex
	brackets.			including quadratic sequences.		 Solve one and t
	 Form and solve linear inequalities 		0	Factorise quadratics for x 2 coefficients equal to one.	•	GEOMETRY AND MEAS
	 Identify key features of a linear graphs 	٠	GEOM	ETRY AND MEASURE		 Measure angles
	including gradient and y-intercept.		0	Understand what is meant my parallel.		 Convert metric
	GEOMETRY AND MEASURE		0	Calculate the areas of basic and compound shapes.		 Calculate the period
	 Measure angles and lengths accurately. 		0	Find the order of rotational symmetry for regular shapes.		 Understand what
	 Convert metric units of length. 		0	Identify the different types of angles formed by parallel		 Calculate the ar
	 Calculate the perimeter of basic and 			lines and a transversal.		 Find the order c
	compound shapes.		0	Recognise nets of 3D shapes.		 Accurately desc
	 Recognise shapes which tessellates. 		0	Draw plans and elevations of a given solid.	•	NUMBER
	NUMBER	•	NUME	BER		 Identify factors
	 Recognise and use number bonds to ten. 		0	Recognise and use notation for powers and roots.		 Select and apply
.	 Recall and use times tables effectively. 		0	Evaluate and explain complex fraction calculations		 Understand and
Developing	 Identify factors and multiples of a number. 			including mixed numbers.		fractions, decim
	0		0	Select appropriate method for calculations involving		 Evaluate basic f
	RATIO AND PROPORTION			fractions.	•	RATIO AND PROPORTIC
	 Compare two amounts using a bar models 		0	Use rounding to estimate a solution.		 Perform calcula
	(ratio).	•	RATIO	AND PROPORTION		 Understand the
	 Express amounts in ratio form 		0	Perform calculations involving ratio		or inversely pro
	 Recognise notation for powers and roots 		0	Understand the relationship between variables which are		
			0	directly proportional	•	$\bigcirc Construct a tree$
	 Construct and interpret a tally charts 		0	Perform more complex calculations involving two part		 Understand sot
	 Read and understand bar charts and 		0	and three-nart ratios		\circ Interpret and \circ
	o neau anu unuerstanu bar tildits allu	-				 Interpret and the Understand the
	 Interpret dual and composite bar charts 		FNUDF	Know the difference between discrete and continuous		theoretical prof
			0	data		
			-	uala. Understand what is meant my bias / unbiased data		
			0	Understand what is meant my blas/unblased data.		
			0	input data into a frequency table.	<u> </u>	

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urface area of any prism.

ated percentage change.

rcentage multipliers.

apply a multiplier effectively.

calculate reverse percentages.

e relationship between variables which are directly portional.

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e relationship between variables which are directly portional.

ive reasoning to scale values (developing bar

TISTICS

e relationship between relative frequency and bability.

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stimate mean from a grouped frequency table.

hat is meant by union and intersection of a Venn

xpression to find different unknowns including SDT. wo step equations.

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and lengths accurately.

units of length.

erimeter of compound shapes.

at is meant my parallel.

reas of basic and compound shapes.

of rotational symmetry for regular shapes.

cribe and draw a reflection transformation.

and multiples of a number.

y appropriate addition and subtraction methods.

compare fractions including equivalence of

nals and percentages.

raction calculations

ON

ations involving ratio.

e relationship between variables which are directly portional.

TISTICS

e diagram to solve probability problems.

notation.

ompare frequency diagrams.

e relationship between relative frequency and pability.

te frequency diagram.

	٠	ALGEBRA	•	ALGEB	ALGEBRA		ALGEB	BRA
		 Recognise co-ordinates in 1st quadrant. 		0	Understand how to collect like terms		0	Multiply out brac
		 Recognise and continue a sequence. 		0	Solve two step algebraic calculations using function			factorise.
		 Solve one step algebraic calculations using 			machines.		0	Substitute nume
		function machines.		0	Recognise term-to-term rules for a sequence.		0	Describe the nth
		 Represent unknowns pictorially. 		0	Simplify basic algebraic expressions.		0	Solve one step al
	٠	GEOMETRY AND MEASURE	•	GEOM	ETRY AND MEASURE		0	Form basic algeb
		 Recognise and name 2D shapes correctly. 		0	Recognise and name 3D shapes correctly.	•	GEOM	IETRY AND MEASU
		 Understand basic angle rules for straight lines 		0	Find lines of symmetry for basic 2D shapes.		0	Measure angles a
		and around points.		0	Recognise shapes which tessellates.		0	Convert metric u
	•	NUMBER	•	NUME	BER		0	Calculate the per
		 Recognise and use number bonds to ten 		0	Evaluate more complex fraction calculations including		0	Understand what
		Recall and use times tables effectively.			mixed numbers		0	Calculate the are
		 Read and write whole numbers and decimals 		0	Calculate fractions of an amount.		0	Find the order of
1.Novice		in figures and words.		0	Use multiplicative reasoning when performing		0	Accurately descri
		 Understand and use place value correctly. 			calculations involving fractions.	•	NUMB	BER
		 Recognise and perform calculations using 		0	Use knowledge of percentages to compare two		0	Evaluate and exp
		powers of 10			quantities.			numbers.
	•	RATIO AND PROPORTION	•	RATIO	AND PROPORTION		0	Select appropriat
		 Understand directed numbers 		0	Complete calculations involving directed numbers		0	Use rounding to
		 Compare two amounts using a bar models 		0	Express amounts in ratio form.	•	RATIO	AND PROPORTIO
		(ratio).		0	Perform calculations involving ratio.		0	Describe correlat
		 Understand steps to share a ratio. 	•	PROBA	ABILITY AND STATISTICS		0	Understand the r
	•	PROBABILITY AND STATISTICS		0	Input data into a frequency table.			theoretical proba
		 Understand probability facts, unlikely, certain, 		0	Solve problems involving averages and range.		0	Draw an accurate
		etc.		0	Use systematic listing to display outcomes of a set.	•	PROBA	ABILITY AND STATI
		 Recognise and perform calculations using 					0	Construct a pie c
		powers of 10.					0	Understand what
						1	0	Know the differe

ckets, identify and take out common factors to

- rical values into expressions.
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