## MATHEMATICS \_2022 WEEKLY TEACHING PLAN \_ GRADE 9

TERM 1	Week 1	Week 2	Week	3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10
	3 days	5 days	5 day	S	5 days	5 days	5 days	5 days	5 days	5 days	4 days
Hours per week	2.5 hrs	4.5 hrs	4.5 hr	S	4.5 hrs	4.5 hrs	4.5 hrs	4.5 hrs	4.5 hrs	4.5 hrs	3.5 hrs
Hours per topic	2.5 hrs	7 hrs			9 hrs	2 hrs	9 hrs		4.5 hrs	4.5 hrs	3.5 hrs
% Coverage	1.7%	4.8 = 6.5%	0	6.2 = 12.7%			6.2 = 18.9%		3 = 21.9%	3 = 25%	
Topics, concepts and skills	REVISION OF GRADE 8 WORK	<ul> <li>WHOLE NUMBERS</li> <li>Properties of numbers</li> <li>Describe the real number system by recognising, defining and distinguishing properties of: <ul> <li>natural numbers, whole numbers, integers, rational numbers, irrational numbers</li> </ul> </li> <li>Calculations using whole numbers</li> <li>Revise: Calculations using all four operations on whole numbers, estimating and using calculators where appropriate</li> <li>Multiples and factors</li> <li>Use prime factorisation of numbers to find LCM and HCF</li> </ul> <li>Solve problems <ul> <li>Solve problems in contexts involving: <ul> <li>Ratio and rate</li> <li>Direct and indirect proportion</li> </ul> </li> </ul></li>		<ul> <li>INTEGERS</li> <li>Calculations with integers</li> <li>Addition and subtraction with integers</li> <li>Multiplication and division with integers</li> <li>perform calculations involving all four operations with integers</li> <li>perform calculations involving all four operations with numbers that involve the squares, cubes, square roots and cube roots of integers</li> <li>Properties of integers</li> <li>Revise: <ul> <li>Commutative, associative and distributive properties of addition for integers</li> <li>Additive and multiplication for integers</li> </ul> </li> </ul>		g FORMAL ASSESSMENT TASK ASSIGNMENT • Whole numbers • Integers • Integers	EXPONENTS Calculations using a exponential form • Revise the follow laws of exponents $- a^m \times a^n = a^{m+1}$ $- a^m \div a^n = a^{m-1}$ $- (a^m)^n = a^m \times n^n$ $- (a \times t)^n = a^n \times 1^n$ $- a^0 = 1$ • Extend the generic exponents to inclu- - integer expor $- a^{-m} = \frac{1}{a^m}$ • Perform calculation all four operations numbers in export	numbers in ing general s. n, if m>n t <sup>n</sup> ral laws of ude: nents ons involving s using nential form	<ul> <li>NUMERIC AND GEOMETRIC PATTERNS: NUMERIC PATTERNS</li> <li>Investigate and extend patterns</li> <li>Investigate and extend numeric and geometric patterns looking for relationships between numbers including patterns:         <ul> <li>represented in physical or diagram form, not limited to sequences involving a constant difference or ratio, of learner's own creation, represented in tables, represented algebraically</li> </ul> </li> <li>Describe and justify the general rules for observed relationships between numbers in own words or in algebraic language</li> </ul>	REVISION	FORMAL ASSESSMENT TASK TEST All Term 1 topics
Prerequisite skill or pre- knowledge		<ul> <li>The commutative; distributive proper numbers</li> <li>0 in terms of its ad property (identity e addition)</li> <li>1 in terms of its ma property (identify e multiplication)</li> <li>Recognise the div of 0, whereby any divided by 0 is und</li> </ul>	associative; ties of whole ditive element for ultiplicative element for ision property number defined	<ul> <li>Per all 1 nur cub roo</li> <li>Cal squ of r</li> </ul>	form calculations involvin four operations with mbers that involve square bes, square roots and cub ts of integers lculate the squares, cubes uare roots and cube roots rational numbers	g , ,	Recognize and appropriate laws involving expon- square and cube	use the s of numbers ents and e roots	<ul> <li>Determine input values, output values and rules for patterns given in input-output diagrams</li> <li>Determine equivalence of different descriptions of the same relationship or rule presented verbally, in a flow diagram, by a number sentence.</li> </ul>		

TERM 2	Week 1 4 days	Week 2 4 days	Week 3 4 days	Week 4 4 days	Week 5 4 days		Week 6 5 days	Week 7 5 days	Week 8 5 days	
Hours per week	3.5 hrs	3.5 hrs	3.5 hrs	3.5 hrs	3.5 hrs		4.5 hrs	4.5 hrs	4.5 hrs	
Hours per topic	6 hrs	3		14 hrs			2 hrs	13.5 hrs		
% Coverage	4.1 = 29	.1%		9.7 = 38.8	%				9 = 47.8%	
Topics, concepts and skills	<ul> <li>NUMERIC AND GEOMETRI GEOMETRIC PATTERNS</li> <li>Investigate and extend patt</li> <li>Investigate and extend patt</li> <li>Investigate and extend patt</li> <li>represented in physical limited to sequences in difference or ratio, of learepresented in tables, re</li> <li>Describe and justify the g observed relationships be words or in algebraic lang</li> </ul>	C PATTERNS terns umeric and geometric onships between ns: or diagram form, not volving a constant arner's own creation, epresented algebraically eneral rules for etween numbers in own guage	ALGEBRAIC EX Algebraic lang • Revise the fo – Recognize algebraic e – Identify and algebraic e – Recognize exponents – Recognize monomials Expand and s • Revise the fo associative a numbers and – add and su expression – multiply int monomials – divide the formonomials – divide the formonomials – simplify algebraic to N.B. ENSUR DECIMAL FI WITH EXPR • Extend the a include: – multiply int polynomial – divide poly – the product the square • Factorize algebraic • Common fa – difference – trinomials – Simplify algebraic • Revise the formonomials – add and su expression – multiply int polynomial – divide poly – the product the square • Simplify algebraic • Simplify algebraic	<b>KPRESSIONS</b> <b>uage</b> billowing: and identify con- expressions d classify like a expressions and identify con- in algebraic ex- and differentia s, binomials an <b>simplify algeb</b> billowing: using and distributive d laws of expon- ubtract like term is. egers and mor- s, binomials, tri- following by infle- s, binomials, tri- following by infle- the squares, c- oots of single a- egers and mor- s, nomials by infle- to f two binom- e of a binomial- praic expression- actors of two squares- of the form: x + c bx + c, where- estraic expressi- isation proces- estraic fractions- base to the form: x + c	onventions for and unlike term oefficients and are between d trinomials raic expressions ate between d trinomials raic expression the commutation nents to: ns in algebraic egers or monon nomials egers or monon nomials sions involving ubes, square re algebraic terms ON FRACTIONS PART OF CALCU 122 and 123 of ( c manipulations nomials by egers or monor ials, ons sions that involving a is a common ons that involving using factorisa	writing hs in ons. ive, hal omials: the oots s or like AND LATIONS CAPS) s to mials, lve: n factor. e the ation	FORMAL ASSESSMENT TASK INVESTIGATION • Numeric and geometric patterns • Algebraic expressions	<ul> <li>ALGEBRAIC II</li> <li>Revise the <ul> <li>set up situation</li> <li>analyse describe</li> <li>Solve of a using a inverse</li> <li>using a inverse</li> <li>using a inverse</li> <li>Use su genera</li> </ul> </li> <li>Extend solv <ul> <li>using fa</li> <li>equation factors</li> </ul> </li> </ul>	EQUATIONS following: equations to de- ins e and interpret be a given situal equations by in- additive and mu- s aws of exponer equations by su- bstitution in eq- ite tables of ord ing equations to actorisation ns of the form: = 0	

Week 9 5 days	Week 10 3 days	Week 11 5 days
4.5 hrs	2.5 hrs	4.5 hrs
	2.5 hrs	4.5 hrs
	1.7 = 50%	
	REVISION	FORMAL ASSESSMENT TASK
cribe problem		TEST/EXAMINATION
quations that on pection plicative		All Term 1 & 2 topics
stitution ations to red pairs include:		
product of		
	Week 9 5 days 4.5 hrs	Week 9 5 daysWeek 10 3 days4.5 hrs2.5 hrs2.5 hrs1.7 = 50%1.7 = 50%REVISIONcribe problem quations that on bection iplicativeREVISIONs stitution ations to red pairs include: product ofImage: Note that the the the the the the the the the th

Prerequisite skill or pre- knowledge • Determine in patterns and tables and fo • Determine, ir different deso rule presente tables and by	<ul> <li>Algebraic language</li> <li>Factors and multiples</li> <li>Expand and simply algebraic expanding to the same relationship or ted verbally, in flow diagrams, in by formulae</li> <li>Algebraic language</li> <li>Factors and multiples</li> <li>Expand and simply algebraic expanding to the squares, cubes, so cube roots of single algebraic ter algebraic terms</li> </ul>	oressions equare roots and rms or like	<ul> <li>Write number sentences to describe problem situations</li> <li>Analyse and interpret number sentences that describe a given situation</li> <li>Solve and complete number sentences by: <ul> <li>inspection</li> <li>trial and improvement</li> </ul> </li> <li>Identify variables and constants in given formulae or equations</li> <li>Use substitution in equations to generate tables of ordered pairs</li> <li>Extend solving equations to include: <ul> <li>using additive and multiplicative inverses</li> <li>using laws of exponents</li> </ul> </li> </ul>		
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TERM 3	Week 1 4 days	Week 2 5 days	2 Week 3 5 days	We 5 (	/eek 4 days	Week 5 4 days	Week 6 5 days	Week 7 5 days	Week 8 5 days	Week 9 5 days	Week 10 5 days	Week 11 4 days
Hours per work	3.5 hrs	4.5 hrs	4.5 hrs	4.5	4.5 hrs 3.5 hrs		4.5 hrs	4.5 hrs	4.5 hrs	4.5 hrs	4.5 hrs	3.5 hrs
Hours per topic	6.5 hrs		9 hrs		5 hrs		9 hrs		9 hrs		4.5 hrs	3.5 hrs
% Coverage	3.8 = 53.8	3%	5.2 = 59%		2.9 = 61.9%		5.2 =	67.1%	5.2 =	72.3%	2.6 = 75%	
Topics, concepts and skills	<ul> <li>FUNCTIONS AND RELATIONSHIPS</li> <li>Input and output values or rules for relationships usin <ul> <li>flow diagrams</li> <li>tables</li> <li>formulae</li> <li>equations</li> </ul> </li> <li>Equivalent forms</li> </ul> <li>Determine, interplequivalence of dif descriptions of the relationship or rule <ul> <li>verbally</li> <li>in flow diagra</li> <li>in tables</li> <li>by formulae</li> <li>by equations</li> </ul> </li> <li>by graphs on plane</li>	lues alues, output patterns and g: s ret and justify ferent e same e presented: ms a Cartesian	<ul> <li>GRAPHS</li> <li>Interpreting graphs</li> <li>Extend the focus on features of I graphs: <ul> <li>x-intercept and y-interest</li> <li>Gradient</li> </ul> </li> <li>Drawing graphs <ul> <li>Use tables of ordered particle plot points and draw grapthe Cartesian plane</li> <li>Extend drawing of graphs given equations</li> <li>determining equation given linear graphs.</li> </ul> </li> </ul>	ures cus on linear ercept irs to ohs on s with s from s from	Transformati Recognize perform tra with points simple ge co-ordinat on: - reflecti Y- axis - transla across	MATION ions , describe and ansformations , line segments and cometric figures on a te plane, focusing ion in the X-axis or ation within and quadrants	<ul> <li>GEOMETRY OF STRAIGHT LINE</li> <li>Angle relationslip</li> <li>Revise and w descriptions of relationship b formed by: <ul> <li>perpendic</li> <li>intersectin</li> <li>parallel lin transversa</li> </ul> </li> <li>Solving problem</li> <li>Solve geome using the relations of between pairs described about the solution of the solution of the solution of the solution of the solution of the solution of the solution of the solution of the sol</li></ul>	ES hips write clear of the between angles authors in the bes cut by a al this write problems ationships s of angles ove	GEOMETRY OF AND COSTRUC GEOMETRIC FIG Classifying 2D s • Revise prope definitions of of their sides distinguishing – equilatera – isosceles – right-angle Constructions PROVIDE LEARNEF ACCURATELY CON FIGURES TO INVES PROPERTIES OF TR • Investigate th triangle, focus relationship b exterior angle of a tria interior angles Classifying 2D s • Revise and w definitions of in terms of the and diagonals distinguishing – parallelogy – rectangle – square – rhombus – trapezium – kite	2D SHAPES TION OF SURES shapes rties and triangles in terms and angles, between: d triangles ed triangles ed triangles ed triangles ed triangles ed triangles ed triangles ed triangles en angles in a sing on the etween the ingle and its s shapes rite clear quadrilaterals eir sides, angles s, between: angles angles s, shapes	REVISION	FORMAL ASSESSMENT TASK TEST All Term 3 topics

				FIGURES TO IN PROPERTIES OF • investigate and diago quadrilate – explorin interior polygou – the dia rectang – paralle kites
Prerequisite skill or pre- knowledge		<ul> <li>Translations, reflections, rotations enlargements and reductions with geometric figures and shapes on grid paper</li> </ul>	<ul> <li>Recognize and describe pairs of angles formed by:         <ul> <li>perpendicular lines</li> <li>intersecting lines</li> <li>parallel lines cut by a transversal</li> </ul> </li> <li>Solve geometric problems using the relationships between pairs of angles described above</li> </ul>	<ul> <li>the sum of of triangles</li> <li>Identify and definitions focusing or</li> </ul>

N.B. BY THE END OF TERM 3, LEARNERS SHOULD HAVE COMPLETED A PROJECT AND A TEST. SEE NOTES ON PROJECT FROM ABRIDGED SECTION 4.

VESTIGATE THE F QUADRILATERALS e sides and angles. nals in rals, focusing on: ng the sum of the angles of ns gonals of gles, squares, lograms, rhombi and	
the interior angles of write clear of types of triangles n sides and angles	

TERM 4	Week 1 4 days	Week 2 5 days	Week 3 5 days		Week 4 5 days	Week 5 5 days	Week 6 5 days	Week 7 5 days	Week 8 5 days	Week 9 5 days	Week 10 4 days
Hours per week	3.5 hrs	4.5 hrs	4.5 hrs 4.5		i hrs 4.5 hrs		4.5 hrs	4.5 hrs	4.5 hrs	4.5 hrs	3.5 hrs
Hours per topic	6 hrs	4.5 hrs	4.5 hrs		9 hrs		hrs	2 hrs		12.5 hrs	
% Coverage	4.9 = 79.9%	3.7 = 83.0	3.7 = 83.6%		7.4 = 91%		98.4%	1.6 = 100%			
Topics, concepts and skills	<ul> <li>GEOMETRY OF 2D SHAPES A COSTRUCTIONS</li> <li>Similar and congruent triangles</li> <li>Through investigation, establisminimum conditions for congruent trian</li> <li>Through investigation, establisminimum conditions for similar triangles</li> <li>Constructions</li> <li>PROVIDE LEARNERS WITH ACCURATELY CONSTRUCTED FIGURES</li> <li>Explore the minimum condition two triangles to be congruent</li> <li>Solving problems</li> <li>Solve geometric problems invunction unknown sides and angles in triangles and quadrilaterals, using known properties of triation and quadrilaterals, as well as properties of congruent and similar triangles.</li> </ul>	ND THEOREM OF PYT • Use the Theorem Pythagoras to so involving unknow geometric figures right-angled trian ons for volving ingles	THEOREM OF PYTHAGORAS       AREA AND P         • Use the Theorem of Pythagoras to solve problems involving unknown lengths in geometric figures that contain right-angled triangles       • Use appro- conversion solve problems perimeter – polygon – circles		ERIMETER OF 2-D priate formulae and s between SI units, to lems and calculate and area of: is	SURFACE AREA A D OBJECTS • Use appropriate for conversions betwork problems and calcarea, volume and – rectangular pris – triangular pris – cylinders cylin	REVISION	FORM	FORMAL ASSESSMENT TASK         TEST/EXAMINATION		
Prerequisite skill or pre- knowledge		<ul> <li>Determine whether a triangle is a right-angled triangle or not if the length of the three sides of the triangle are known</li> <li>Use the Theorem of Pythagoras to calculate a missing length in a right- angled triangle, leaving irrational answers in surd form</li> <li>Use the Theorem of Pythagoras to calculate a missing length in a right- angled triangle, leaving irrational answers in surd form</li> <li>Use of appropriate formulae to calculate perimeter and area of polygons to include circles to at least 2 decimal places and conve between appropriate SI units, including and up to km<sup>2</sup></li> <li>Calculate perimeter and area of complex figures</li> </ul>		ropriate formulae to erimeter and area of o include circles to at imal places and convert opropriate SI units, nd up to km <sup>2</sup> perimeter and area of gures	<ul> <li>Use of appropria calculate the sur and capacity of or rectangular prism</li> <li>Describe the interbetween surface the objects ment</li> <li>Use and convert SI units, includin - mm<sup>2</sup> ↔ cm<sup>2</sup> ← - mm<sup>3</sup> ↔ cm<sup>3</sup> ←</li> </ul>	the formulae to face area, volume cubes and ns errelationship a area and volume of ioned above between appropriate g: $\rightarrow m^2 \leftrightarrow km^2$ $\rightarrow m^3$ $\leftrightarrow kl$					