MATHEMATICS PROGRESSION: Grade 6 to 9

NUMBER PROGRESSION: WHOLE NUMBERS				
ТОРІС	MATHEMATICS 6	MATHEMATICS 7	MATHEMATICS 8	MATHEMATICS 9
SAYING NUMBER SEQUENCES, MEANINGFUL COUNTING, AND SKIP COUNTING	N01 Students will be expected to demonstrate an understanding of place value for numbers greater than one million and less than one- thousandth.	N07 Students will be expected to compare, order, and position positive fractions, positive decimals (to thousandths), and whole numbers by using benchmarks, place value, and equivalent fractions and/or decimals.		
REPRESENTING AND PARTITIONING WHOLE NUMBERS	N01 Students will be expected to demonstrate an understanding of place value for numbers greater than one million and less than one-thousandth.	N07 Students will be expected to compare, order, and position positive fractions, positive decimals (to thousandths), and whole numbers by using benchmarks, place value, and equivalent fractions and/or decimals.	N01 Students will be expected to demonstrate an understanding of perfect squares and square roots, concretely, pictorially and symbolically (limited to whole numbers).	
COMPARING AND ORDERING WHOLE NUMBERS	N01 Students will be expected to demonstrate an understanding of place value for numbers greater than one million and less than one-thousandth.	N07 Students will be expected to compare, order, and position positive fractions, positive decimals (to thousandths), and whole numbers by using benchmarks, place value, and equivalent fractions and/or decimals.		
PLACE VALUE – WHOLE NUMBERS	N01 Students will be expected to demonstrate an understanding of place value for numbers greater than one million and less than one-thousandth.	N07 Students will be expected to compare, order, and position positive fractions, positive decimals (to thousandths), and whole numbers by using benchmarks, place value, and equivalent fractions and/or decimals.		

NUMBER PROGRESSION: DECIMAL NUMBERS				
TOPIC MATHEMATICS 6 MATHEMATICS 7 MATHEMATICS 8 MATHEMATICS 9				
REPRESENTING	N01 Students will be expected to	N04 Students will be expected to	N03 Students will be expected to	N03 Students will be expected to
DECIMAL	demonstrate an understanding of	demonstrate an understanding of	demonstrate an understanding of	demonstrate an understanding of
NUMBERS	place value for numbers greater	the relationship between positive	and solve problems involving	

	than one million and less than one-	terminating decimals and positive	percents greater than or equal to	rational numbers by comparing and
		repeating decimals (with one or	0%.	solving problems that involve
		two repeating digits) and positive		arithmetic operations on rational
		fractions.		numbers.
		N04.01 Predict the decimal		
		representation of a given fraction		
		using patterns.		
		N04.02 Match a given set of		
		representations		
		NOA 03 Sort a given set of fractions		
		as repeating or terminating		
		decimals.		
		N04.04 Express a given fraction as a		
		terminating or repeating decimal.		
		N04.05 Express a given repeating		
		decimal as a fraction.		
		N04.06 Express a given terminating		
		decimal as a fraction.		
		N07 Students will be expected		
		to compare, order, and position		
		positive fractions, positive		
		decimals (to thousandths), and		
		whole numbers by using		
		benchmarks, place value, and		
		decimals.		
COMPARING	N01 Students will be expected to	N07 Students will be expected		N03 Students will be expected to
AND ORDERING	demonstrate an understanding of	to compare, order, and position		demonstrate an understanding of
DECIMAL	place value for numbers greater	positive fractions, positive		rational numbers by comparing and
NUMBERS	than one million and less than one-	decimals (to thousandths), and		ordering rational numbers and
	thousandth.	benchmarks place value and		arithmetic operations on rational
		equivalent fractions and/or		numbers.
		decimals.		
		N04 Students will be expected to		
		the relationship between positive		
		terminating decimals and positive		
		fractions and between positive		
		repeating decimals (with one or		
		two repeating digits) and positive		
		fractions.		

		N04.01 Predict the decimal representation of a given fraction using patterns. N04.02 Match a given set of fractions to their decimal representations. N04.03 Sort a given set of fractions as repeating or terminating decimals. N04.04 Express a given fraction as a terminating decimal.	
		N04.05 Express a given repeating decimal as a fraction. N04.06 Express a given terminating decimal as a fraction.	
PLACE VALUE – DECIMAL NUMBERS	N01 Students will be expected to demonstrate an understanding of place value for numbers greater than one million and less than one- thousandth.	 N07 Students will be expected to compare, order, and position positive fractions, positive decimals (to thousandths), and whole numbers by using benchmarks, place value, and equivalent fractions and/or decimals. N04 Students will be expected to demonstrate an understanding of the relationship between positive terminating decimals and positive fractions and between positive 	
		repeating decimals (with one or two repeating digits) and positive fractions. N04.01 Predict the decimal representation of a given fraction using patterns. N04.02 Match a given set of fractions to their decimal representations. N04.03 Sort a given set of fractions as repeating or terminating decimals. N04.04 Express a given fraction as a terminating or repeating decimal. N04.05 Express a given repeating decimal as a fraction. N04.06 Express a given terminating	

	NUMBER PROGRESSION: FRACTIONS				
TOPIC	MATHEMATICS 6	MATHEMATICS 7	MATHEMATICS 8	MATHEMATICS 9	
REPRESENTING FRACTIONS	 N04 Students will be expected to relate improper fractions to mixed numbers and mixed numbers to improper fractions. N06 Students will be expected to demonstrate an understanding of percent (limited to whole numbers) concretely, pictorially, and symbolically. N05 Students will be expected to demonstrate an understanding of ratio, concretely, pictorially, and symbolically. 	 NO7 Students will be expected to compare, order, and position positive fractions, positive decimals (to thousandths), and whole numbers by using benchmarks, place value, and equivalent fractions and/or decimals. NO4 Students will be expected to demonstrate an understanding of the relationship between positive terminating decimals and positive fractions and between positive repeating decimals (with one or two repeating digits) and positive fractions. NO4.01 Predict the decimal representation of a given fraction using patterns. NO4.02 Match a given set of fractions to their decimal representations. NO4.03 Sort a given set of fractions as repeating or terminating decimals. NO4.04 Express a given fraction as a terminating or repeating decimal. NO4.05 Express a given terminating decimal as a fraction. SP04 Students will be expected to express probabilities as ratios, fractions, and percents. 	 NO3 Students will be expected to demonstrate an understanding of and solve problems involving percents greater than or equal to 0%. NO5 Students will be expected to solve problems that involve rates, ratios and proportional reasoning. NO6 Students will be expected to demonstrate an understanding of multiplying and dividing positive fractions and mixed numbers, concretely, pictorially and symbolically. 	N03 Students will be expected to demonstrate an understanding of rational numbers by comparing and ordering rational numbers and solving problems that involve arithmetic operations on rational numbers.	
COMPARING AND ORDERING FRACTIONS	N04 Students will be expected to relate improper fractions to mixed numbers and mixed numbers to improper fractions.	N07 Students will be expected to compare, order, and position positive fractions, positive decimals (to thousandths), and whole numbers by using		N03 Students will be expected to demonstrate an understanding of rational numbers by comparing and ordering rational numbers and	

benchmarks, place value, and		solving problems that involve
equivalent fractions and/or		arithmetic operations on rational
decimals.		numbers.
N04 Students will be expected to		
demonstrate an understanding of		
the relationship between positive		
terminating decimals and positive		
fractions and between positive		
repeating decimals (with one or		
two repeating digits) and positive		
fractions.		
N04.01 Predict the decimal		
representation of a given fraction		
using patterns.		
N04.02 Match a given set of		
fractions to their decimal		
representations.		
N04.03 Sort a given set of fractions		
as repeating or terminating		
decimals.		
N04.04 Express a given fraction as a		
terminating or repeating decimal.		
N04.05 Express a given repeating		
decimal as a fraction.		
N04.06 Express a given terminating		
decimal as a fraction.		
	benchmarks, place value, and equivalent fractions and/or decimals. N04 Students will be expected to demonstrate an understanding of the relationship between positive terminating decimals and positive fractions and between positive repeating decimals (with one or two repeating digits) and positive fractions. N04.01 Predict the decimal representation of a given fraction using patterns. N04.02 Match a given set of fractions to their decimal representations. N04.03 Sort a given set of fractions as repeating or terminating decimals. N04.04 Express a given fraction as a terminating or repeating decimal. N04.05 Express a given repeating decimal as a fraction. N04.06 Express a given terminating decimal as a fraction.	benchmarks, place value, and equivalent fractions and/or decimals. N04 Students will be expected to demonstrate an understanding of the relationship between positive terminating decimals and positive fractions and between positive repeating decimals (with one or two repeating digits) and positive fractions. N04.01 Predict the decimal representation of a given fraction using patterns. N04.02 Match a given set of fractions to their decimal representations. N04.03 Sort a given set of fractions as repeating or terminating decimals. N04.04 Express a given fraction as a terminating or repeating decimal. N04.05 Express a given terminating decimal as a fraction.

NUMBER PROGRESSION: OPERATIONS ADDITION AND SUBTRACTION						
ΤΟΡΙΟ	OPIC MATHEMATICS 6 MATHEMATICS 7 MATHEMATICS 8 MATHEMATICS 9					
ADDITION AND	Basic addition and subtraction facts	Basic addition and subtraction facts	Basic addition and subtraction facts	Basic addition and subtraction facts		
SUBTRACTION -	should be under control and	should be under control and	should be under control and	should be under control and		
BASIC FACTS	students are expected to recall	students are expected to recall	students are expected to recall	students are expected to recall		
	them when performing addition	them when performing addition	them when performing addition	them when performing addition		
	and subtraction of larger numbers.	and subtraction of larger numbers.	and subtraction of larger numbers.	and subtraction of larger numbers.		
ADDITION AND	N02 Students will be expected to	N02 Students will be expected to		N03 Students will be expected to		
SUBTRACTION	solve problems involving whole	demonstrate an understanding of		demonstrate an understanding of		
MENTAL	numbers and decimal numbers.	the addition, subtraction,		rational numbers by comparing and		
MATHEMATICS		multiplication, and division of		ordering rational numbers and		
AND		decimals to solve problems (for		solving problems that involve		
ESTIMATION		more than one-digit divisors or		arithmetic operations on rational		
		more than two-digit multipliers,		numbers.		
		the use of technology is expected).				

ADDITION AND	N02 Students will be expected to	N02 Students will be expected to	N02 Students will be expected to
SUBTRACTION -	solve problems involving whole	demonstrate an understanding of	demonstrate an understanding of
CALCULATIONS	numbers and decimal numbers.	the addition, subtraction,	operations on powers with
		multiplication, and division of	integral bases (excluding base 0)
	N09 Students will be expected to	decimals to solve problems (for	and whole number exponents:
	explain and apply the order of	more than one-digit divisors or	$(a^m)(a^n) = a^{m+n}$
	operations, excluding exponents,	more than two-digit multipliers,	m n m-n
	with and without technology	the use of technology is expected).	$a^m \div a^n = a^m , m > n$
	(limited to whole numbers).		$(a^m)^n = a^{mn}$
		N05 Students will be expected to	
		demonstrate an understanding of	$(ab)^m - a^m b^m$
		adding and subtracting positive	(uv) = uv
		fractions and mixed numbers, with	$\left(a\right)^{n} - a^{n} b \neq 0$
		like and unlike denominators,	$\left(\frac{1}{b}\right)^{n} = \frac{1}{b^{n}}, b \neq 0.$
		concretely, pictorially, and	• · · ·
		symbolically (limited to positive	N03 Students will be expected to
		sums and differences).	demonstrate an understanding of
			rational numbers by comparing and
		NU6 Students will be expected to	ordering rational numbers and
		demonstrate an understanding of	solving problems that involve
		integers, concretely, nictorially, and	arithmetic operations on rational
		symbolically	numbers.
		symbolically.	
			N04 Students will be expected to
			explain and apply the order of
			operations, including exponents,
			with and without technology.
			PR06 Students will be expected to
			model, record and explain the
			operations of addition and
			subtraction of polynomial
			expressions, concretely, pictorially
			and symbolically (infined to
			polynomials of degree less than or
			equal to 2).

NUMBER PROGRESSION: OPERATIONS					
MULTIPLICATION AND DIVISION					
TOPIC	MATHEMATICS 6 MATHEMATICS 7 MATHEMATICS 8 MATHEMATICS 9				
MULTIPLICATION	Basic multiplication and division	Basic multiplication and division	Basic multiplication and division	Basic multiplication and division	
AND DIVISION -	facts should be under control and	facts should be under control and	facts should be under control and	facts should be under control and	
BASIC FACTS	students are expected to recall	students are expected to recall	students are expected to recall	students are expected to recall	
	them when performing	them when performing	them when performing	them when performing	
	multiplication and division.	multiplication and division.	multiplication and division.	multiplication and division.	

	NO2 Students will be expected to	NO1 Students will be expected to	NO1 Students will be expected to	
AND DIVISION -	solve problems involving whole	determine and explain why a	demonstrate an understanding of	
MENTAL	numbers and decimal numbers.	number is divisible by 2, 3, 4, 5, 6, 8,	perfect squares and square roots,	
AND	N08 Students will be expected to	be divided by 0.	symbolically (limited to whole	
ESTIMATIONS	demonstrate an understanding of	,	numbers).	
	multiplication and division of	N01.01 Determine if a given		
	multipliers and one-digit natural	number is divisible by $2, 3, 4, 5, 6, 8, 9$, or 10, and explain why.	determine the approximate square	
	number divisors).	N01.03 Determine the factors of a	root of numbers that are not	
		given number using the divisibility	perfect squares (limited to whole	
		rules. NO1 04 Explain using an example	numbers).	
		why numbers cannot be divided by	N03 Students will be expected to	
		0.	demonstrate an understanding of	
			and solve problems involving	
			0%.	
			N05 Students will be expected to	
			ratios, and proportional reasoning.	
			N06 Students will be expected to	
			multiplying and dividing positive	
			fractions and mixed numbers,	
			concretely, pictorially, and	
			symbolically.	
			ΡΕΡΑΤΙΩΝ	
	N		N (CONTINUED)	
TOPIC	MATHEMATICS 6	MATHEMATICS 7	MATHEMATICS 8	MATHEMATICS 9
MULTIPLICATION	NO2 Students will be expected to	N01 Students will be expected to	N01 Students will be expected to	N05 Students will be expected to
AND DIVISION -	solve problems involving whole	determine and explain why a	demonstrate an understanding of	determine the exact square root of
CALCOLATIONS	numbers and decimal numbers.	9. or 10. and why a number cannot	concretely, pictorially and	positive rational numbers
	N03 Students will be	be divided by 0.	symbolically (limited to whole	N06 Students will be expected to
	expected to demonstrate an		numbers).	determine an approximate square
	understanding of factors and	N01.01 Determine if a given number		root of positive rational numbers.
	multiples by	IS divisible by 2, 3, 4, 5, 6, 8, 9, or 10,	NOZ Students will be expected to	NO1 Students will be expected to
	factors of numbers less than	N01.03 Determine the factors of a	root of numbers that are not	demonstrate an understanding of
	100	given number using the divisibility	perfect squares (limited to whole	powers with integral bases
	 identifying prime and 	rules.	numbers).	(excluding base 0) and whole
	composite numbers	N01.04 Explain, using an example,		number exponents by
		why numbers cannot be divided by		

 solving problems using 	0.	N03 Students will be expected to	 representing
multiples and factors		demonstrate an understanding of	repeated multiplication, using
	N02 Students will be expected to	and solve problems involving	powers
N09 Students will be expected to	demonstrate an understanding of	percents greater than or equal to	 using patterns
explain and apply the order of	the addition, subtraction,	0%.	to show that a power with an
operations, excluding exponents,	multiplication, and division of		exponent of zero is equal to
with and without technology	decimals to solve problems (for	N05 Students will be expected to	one
(limited to whole numbers).	more than one-digit divisors or more	solve problems that involve rates,	 solving
	than two-digit multipliers, the use of	ratios, and proportional reasoning.	problems involving powers
N08 Students will be expected to	technology is expected).		
demonstrate an understanding of	<i>o, i i</i>	N06 Students will be expected to	N02 Students will be expected to
multiplication and division of	N03 Students will be expected	demonstrate an understanding of	demonstrate an understanding of
decimals (one-digit whole number	to solve problems involving	multiplying and dividing positive	operations on powers with
multipliers and one-digit natural	percents from 1% to 100%	fractions and mixed numbers	integral bases (excluding base 0)
number divisors)	(limited to whole numbers)	concretely nictorially and	and whole number exponents:
hamber antions).	(inniced to whole nambers).	symbolically	$(\pi^m)(\pi^n) = \pi^{m+n}$
		symbolically.	$(a^{(a)})(a^{(a)}) = a^{(a)}$
		NO7 Students will be expected to	$a^m \div a^n = a^{m-n}, m > n$
		demonstrate an understanding of	$(\alpha^m)^n = \alpha^{mn}$
		multiplication and division of	(a) = a
		integers, concretely, nisterially, and	
		symbolically	$(ab)^m = a^m b^m$
		symbolically.	$\sim n n$
			$\left(\frac{a}{a}\right) = \frac{a}{a}, b \neq 0.$
			b b^n , b^n
			N03 Students will be expected to
			demonstrate an understanding of
			rational numbers by comparing and
			ordering rational numbers and
			solving problems that involve
			arithmetic operations on rational
			numbers
			nambers.
			N04 Students will be expected to
			explain and apply the order of
			operations including exponents
			with and without tochnology
			with and without technology.
			PR07 Students will be expected to
			model record and explain the
			model, record and explain the
			operations of multiplication and
			aivision of polynomial expressions
			(limited to polynomials of degree
			less than or equal to 2) by
			monomials, concretely, pictorially
			and symbolically.

	NUMBER PROGRESSION:					
	RATIO, PERCENT, AND INTEGERS					
TOPIC	MATHEMATICS 6	MATHEMATICS 7	MATHEMATICS 8	MATHEMATICS 9		
RATIO	N05 Students will be expected to demonstrate an understanding of ratio, concretely, pictorially, and symbolically.	SP04 Students will be expected to express probabilities as ratios, fractions, and percents.	N04 Students will be expected to demonstrate an understanding of ratio and rate.			
			N05 Students will be expected to solve problems that involve rates, ratios, and proportional reasoning.			
PERCENT	N06 Students will be expected to demonstrate an understanding of percent (limited to whole numbers) concretely, pictorially, and symbolically.	 N03 Students will be expected to solve problems involving percents from 1% to 100% (limited to whole numbers). SP04 Students will be expected to express probabilities as ratios, fractions, and percents. 	N03 Students will be expected to demonstrate an understanding of and solve problems involving percents greater than or equal to 0%.			
INTEGERS	N07 Students will be expected to demonstrate an understanding of integers contextually, concretely, pictorially, and symbolically.	N06 Students will be expected to demonstrate an understanding of addition and subtraction of integers, concretely, pictorially, and symbolically.	N07 Students will be expected to demonstrate an understanding of multiplication and division of integers, concretely, pictorially, and symbolically.			

PATTERNS AND RELATIONS PROGRESSION				
TOPIC	MATHEMATICS 6	MATHEMATICS 7	MATHEMATICS 8	MATHEMATICS 9
REPEATING PATTERNS				
INCREASING PATTERNS	 PR01 Students will be expected to demonstrate an understanding of the relationships within tables of values to solve problems. PR02 Students will be expected to represent and describe patterns and relationships, using graphs and tables. 	 PR01 Students will be expected to demonstrate an understanding of oral and written patterns and their equivalent linear relations. PR02 Students will be expected to create a table of values from a linear relation, graph the table of values, and analyze the graph to draw conclusions and solve problems. 	PR01 Students will be expected to graph and analyze two-variable linear relations. PR02 Students will be expected to model and solve problems, concretely, pictorially, and symbolically, where a, b, and c are integers, using linear equations of the form $ax = b$; $x/a = b$, $a \neq 0$; ax $+ b = c$; $x/a + b = c$, $a \neq 0$; a(x + b) = c	 N01 Students will be expected to demonstrate an understanding of powers with integral bases (excluding base 0) and whole number exponents by representing repeated multiplication, using powers using patterns to show that a power with an exponent of zero is equal to one solving problems involving powers PR01 Students will be expected to generalize a pattern arising from a problem solving root and solving the solving root and solving root and solving the solving root and solving root

				linear equation, and verify by substitution. PR02 Students will be expected to graph a linear relation, analyze the graph, and interpolate or extrapolate to solve problems.
DECREASING PATTERNS	 PR01 Students will be expected to demonstrate an understanding of the relationships within tables of values to solve problems. PR02 Students will be expected to represent and describe patterns and relationships, using graphs and tables. 	 PR01 Students will be expected to demonstrate an understanding of oral and written patterns and their equivalent linear relations. PR02 Students will be expected to create a table of values from a linear relation, graph the table of values, and analyze the graph to draw conclusions and solve problems. 	PR01 Students will be expected to graph and analyze two-variable linear relations. PR02 Students will be expected to model and solve problems, concretely, pictorially, and symbolically, where a, b, and c are integers, using linear equations of the form $ax = b$; $x/a = b$, $a \neq 0$; ax $+ b = c$; $x/a + b = c$, $a \neq 0$; a(x + b) = c	 N01 Students will be expected to demonstrate an understanding of powers with integral bases (excluding base 0) and whole number exponents by representing repeated multiplication, using powers using patterns to show that a power with an exponent of zero is equal to one solving problems involving powers PR01 Students will be expected to generalize a pattern arising from a problem-solving context, using a linear equation, and verify by substitution PR02 Students will be expected to graph a linear relation, analyze the graph, and interpolate or extrapolate to solve problems.
EQUALITY	 PR01 Students will be expected to demonstrate an understanding of the relationships within tables of values to solve problems. PR02 Students will be expected to represent and describe patterns and relationships, using graphs and tables. PR03 Students will be expected to represent generalizations arising from number relationships using equations with letter variables. PR04 Students will be expected to demonstrate and explain the 	 PR01 Students will be expected to demonstrate an understanding of oral and written patterns and their equivalent linear relations. PR02 Students will be expected to create a table of values from a linear relation, graph the table of values, and analyze the graph to draw conclusions and solve problems. PR03 Students will be expected to demonstrate an understanding of preservation of equality by - modelling preservation of equality, concretely, pictorially, and 	PR01 Students will be expected to graph and analyze two-variable linear relations. PR02 Students will be expected to model and solve problems, concretely, pictorially, and symbolically, where a, b, and c are integers, using linear equations of the form $ax = b$; $x/a = b$, $a \neq 0$; $ax + b = c$; $x/a + b = c$, $a \neq 0$; a(x + b) = c	 N01 Students will be expected to demonstrate an understanding of powers with integral bases (excluding base 0) and whole number exponents by representing repeated multiplication, using powers using patterns to show that a power with an exponent of zero is equal to one solving problems involving powers PR04 Students will be expected to explain and illustrate strategies to solve single variable linear inequalities with rational

meaning of preservation of equality	symbolically	coefficients within a problem-
concretely, pictorially, and	-applying preservation of equality	solving context.
symbolically.	to solve equations.	
	PR03.01 Model the preservation of	
	equality for each of the four	
	operations, using concrete	
	materials and/or pictorial	
	representations; explain the	
	process orally; and record the	
	process symbolically.	
	PR03.02 Write equivalent forms of	
	a given equation by applying the	
	preservation of equality, and verify	
	using concrete materials (e.g., 3b =	
	12 is equivalent to 3b + 5 = 12 + 5	
	or 2r = 7 is equivalent to 3(2r) =	
	3(7).	
	PR03.03 Solve a given problem by	
	applying preservation of equality.	
	PR04 Students will be expected to	
	explain the difference between an	
	expression and an equation.	
	PR05 Students will be expected to	
	evaluate an expression given the	
	value of the variable(s).	

PATTERNS AND RELATIONS PROGRESSION (CONTINUED)				
TOPIC	MATHEMATICS 6	MATHEMATICS 7	MATHEMATICS 8	MATHEMATICS 9
TOPIC	MATHEMATICS 6PR01 Students will be expected to demonstrate an understanding of the relationships within tables of values to solve problems.PR02 Students will be expected to represent and describe patterns and relationships, using graphs and tables.PR03 Students will be expected to represent generalizations arising from number relationships using equations with letter variables.PR04 Students will be expected to represent and solutions with letter variables.	MATHEMATICS 7 PR01 Students will be expected to demonstrate an understanding of oral and written patterns and their equivalent linear relations. PR02 Students will be expected to create a table of values from a linear relation, graph the table of values, and analyze the graph to draw conclusions and solve problems. PR03 Students will be expected to demonstrate an understanding of preservation of equality by - modelling preservation of acuto the state and the state and the second preservation of equality by - modelling preservation of	MATHEMATICS 8 PR01 Students will be expected to graph and analyze two-variable linear relations. PR02 Students will be expected to model and solve problems, concretely, pictorially, and symbolically, where a, b, and c are integers, using linear equations of the form $ax = b$; $x/a = b$, $a \neq 0$; ax $+ b = c$; $x/a + b = c$, $a \neq 0$; a(x + b) = c	MATHEMATICS 9PR01 Students will be expected to generalize a pattern arising from a problem-solving context, using a linear equation, and verify by substitution.PR02 Students will be expected to graph a linear relation, analyze the graph, and interpolate or extrapolate to solve problems.PR03 Students will be expected to model and solve problems, where a, b, c, d, e, and f are rational numbers, using linear equations of the

meaning of preservation of equality	symbolically	• ax = b
concretely, pictorially, and	-applying preservation of equality	$\frac{x}{a} = b$
symbolically.	to solve equations.	• <i>a</i> , <i>a</i> ≠ 0
	PR03.01 Model the preservation of	• $ax + b = c$
	equality for each of the four	$\frac{x}{b} + b = c$
	operations, using concrete	• <i>a</i> , a ≠ 0
	materials and/or pictorial	• $ax = b + cx$
	representations; explain the	$\bullet a(x+b)=c$
	process orally; and record the	• $ax + b = cx + d$
	process symbolically.	• $a(bx + c) = d(ex + f)$
	PR03.02 Write equivalent forms of	$\frac{a}{r} = b$
	a given equation by applying the	• <i>∧</i> , <i>x</i> ≠ 0
	preservation of equality, and verify	where a, b, c, d, e and f are
	using concrete materials (e.g., 3b =	rational numbers.
	12 is equivalent to $3b + 5 = 12 + 5$	DD04 Churcherse illulate annue she data
	or 2r = 7 is equivalent to 3(2r) =	PRU4 Students will be expected to
	3(7).	explain and illustrate strategies to
	PR03.03 Solve a given problem by	solve single variable linear
	applying preservation of equality.	inequalities with rational
		coefficients within a problem-
	PR04 Students will be expected to	solving context.
	explain the difference between an	DDOF Students will be expected to
	expression and an equation.	demonstrate on understanding of
		demonstrate an understanding of
	PR05 Students will be expected to	of degree less than or equal to 2)
	evaluate an expression given the	of degree less than of equal to 2).
	value of the variable(s).	
	PR06 Students will be expected to	
	model and solve, concretely,	
	pictorially, and symbolically,	
	problems that can be represented	
	by one-step linear equations of the	
	form x + a = b, where a and b are	
	integers.	
	PR07 Students will be expected to	
	model and solve, concretely,	
	pictorially, and symbolically, where	
	a, b, and c are whole numbers,	
	problems that can be represented	
	by linear equations of the form ax	
	+ b = c; ax = b; x ÷ a = b, a ≠ 0	

MEASUREMENT PROGRESSION					
TOPIC	TOPIC MATHEMATICS 6 MATHEMATICS 7 MATHEMATICS 8 MATHEMATICS 9				

MEASUREMENT -				
LENGTH				
MEASUREMENT -	M03 Students will be expected to			
PERIMETER	develop and apply a formula for			
	determining the			
	 perimeter of polygons 			
	 area of rectangles 			
	 volume of right rectangular 			
	prisms			
MEASUREMENT -				
MASS				
MEASUREMENT -	M03 Students will be expected to		M04 Students will be	
VOLUME	develop and apply a formula for		expected to develop and apply	
	determining the		formulas for determining the	
	 perimeter of polygons 		volume of right rectangular	
	 area of rectangles 		prisms, right triangular prisms,	
	 volume of right rectangular 		and right cylinders.	
	prisms			
MEASUREMENT -				
CAPACITY				
MEASUREMENT -	M03 Students will be expected to	M02 Students will be expected to	M03 Students will be expected to	
AREA	develop and apply a formula for	develop and apply a formula for	determine the surface area of right	
AREA	develop and apply a formula for determining the	develop and apply a formula for determining the area of triangles,	determine the surface area of right rectangular prisms, right triangular	
AREA	develop and apply a formula fordetermining theperimeter of polygons	develop and apply a formula for determining the area of triangles, parallelograms, and circles.	determine the surface area of right rectangular prisms, right triangular prisms, and right cylinders to solve	
AREA	 develop and apply a formula for determining the perimeter of polygons area of rectangles 	develop and apply a formula for determining the area of triangles, parallelograms, and circles.	determine the surface area of right rectangular prisms, right triangular prisms, and right cylinders to solve problems.	
AREA	 develop and apply a formula for determining the perimeter of polygons area of rectangles volume of right rectangular 	develop and apply a formula for determining the area of triangles, parallelograms, and circles.	determine the surface area of right rectangular prisms, right triangular prisms, and right cylinders to solve problems.	
AREA	 develop and apply a formula for determining the perimeter of polygons area of rectangles volume of right rectangular prisms 	develop and apply a formula for determining the area of triangles, parallelograms, and circles.	determine the surface area of right rectangular prisms, right triangular prisms, and right cylinders to solve problems. M03.01 Explain, using examples,	
AREA	 develop and apply a formula for determining the perimeter of polygons area of rectangles volume of right rectangular prisms 	develop and apply a formula for determining the area of triangles, parallelograms, and circles.	determine the surface area of right rectangular prisms, right triangular prisms, and right cylinders to solve problems. M03.01 Explain, using examples, the relationship between the area	
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		M03.06 Solve a given problem involving surface area.	
TIME			
MEASUREMENT - CIRCLES	 M01 Students will be expected to demonstrate an understanding of circles by describing the relationships among radius, diameter, and circumference relating circumference to pi determining the sum of the central angles constructing circles with a given radius or diameter solving problems involving the radii, diameters, and circumferences of circles. 	M01 Students will be expected to develop and apply the Pythagorean theorem to solve problems.	
MEASUREMENT - TRIANGLES		M01 Students will be expected to develop and apply the Pythagorean theorem to solve problems.	

GEOMETRY PROGRESSION				
TOPIC	MATHEMATICS 6	MATHEMATICS 7	MATHEMATICS 8	MATHEMATICS 9
3-D OBJECTS	M03 Students will be expected to		M02 Students will be expected to	G01 Students will be
	develop and apply a formula for		draw and construct nets for 3-D	expected to determine
	determining the		objects.	the surface area of
	 perimeter of polygons 			composite 3-D objects to
	 area of rectangles 		G01 Students will be expected to	solve problems.
	 volume of right rectangular 		draw and interpret top, front, and	
	prisms		side views of 3-D objects	
			composed of right rectangular	
			prisms.	

2-D SHAPES	M03 Students will be expected to	M02 Students will be expected to	
	develop and apply a formula for	develop and apply a formula for	
	determining the	determining the area of triangles.	
	 perimeter of polygons 	parallelograms, and circles.	
	 area of rectangles 		
	 volume of right rectangular 		
	nrisms		
	priorito		
	G01 Students will be expected to		
	construct and compare triangles		
	including scalene, isosceles		
	equilateral right obtuse or acute		
	in different orientations		
4110150			
ANGLES	WUI Students will be expected to		
	demonstrate an understanding of		
	angles by		
	 Identifying examples of 		
	angles in the environment		
	 classifying angles according 		
	to their measure		
	 estimating the measure of 		
	angles using 45°, 90°, and		
	180° as reference angles		
	 determining angle 		
	measures in degrees		
	 drawing and labelling 		
	angles when the measure		
	is specified		
	M02 Students will be expected to		
	demonstrate that the sum of		
	interior angles is 180° in a triangle		
	and 360° in a quadrilateral.		
SORTING 3-D			
OBJECTS			
AND			
2-D SHAPES			
TRANSFORMATI	G03 Students will be expected to	G02 Students will be expected to	
ONAL	perform a combination of	identify and plot points in the four	
GEOMETRY	translation(s), rotation(s), and/or	quadrants of a Cartesian plane,	
	reflection(s) on a single 2-D shape,	using integral ordered pairs.	
	with and without technology, and		
	draw and describe the image.	G02.01 Label the axes of a four	
		quadrant Cartesian plane and	
	G04 Students will be expected to	identify the origin.	
	perform a combination of	G02.02 Identify the location of a	
	successive transformations of 2-D	given point in any quadrant of a	
	shapes to create a design and	Cartesian plane using an integral	

identify and describe the	ordered pair.	
transformations.	G02.03 Plot the point	
	corresponding to a given integral	
G05 Students will be expected to	ordered pair on a Cartesian plane	
identify and plot points in the first	with units of 1, 2, 5, or 10 on its	
quadrant of a Cartesian plane using	axes.	
whole number ordered pairs.		
G06 Students will be expected to		
perform and describe single		
transformations of a 2-D shape in		
the first quadrant of a Cartesian		
plane (limited to whole number		
vertices).		

STATISTICS AND PROBABILITY PROGRESSION							
TOPIC	MATHEMATICS 6	MATHEMATICS 7	MATHEMATICS 8	MATHEMATICS 9			
DATA MANAGEMENT	G05 Students will be expected to identify and plot points in the first quadrant of a Cartesian plane using whole number ordered pairs. SP01 Students will be expected to create, label, and interpret line graphs to draw conclusions. SP02 Students will be expected to	GO2 Students will be expected to identify and plot points in the four quadrants of a Cartesian plane, using integral ordered pairs. GO2.01 Label the axes of a four quadrant Cartesian plane and identify the origin. GO2.02 Identify the location of a given point in any quadrant of a	SP01 Students will be expected to critique ways in which data is presented.	SP01 Students will be expected to describe the effect on the collection of data of bias, use of language, ethics, cost, time and timing, privacy, and cultural sensitivity. SP03 Students will be expected to develop and			
	select, justify, and use appropriate methods of collecting data, including questionnaires, experiments, databases, and electronic media.	Cartesian plane using an integral ordered pair. G02.03 Plot the point corresponding to a given integral ordered pair on a Cartesian plane with units of 1, 2, 5, or 10 on its axes. SP03 Students will be expected to		 implement a project plan for the collection, display, and analysis of data by formulating a question for investigation choosing a data collection method that includes social considerations selecting a population or a 			
		 construct, label, and interpret circle graphs to solve problems SP03.01 Identify common attributes of circle graphs, such as title, label, or legend the sum of the central angles is 360° the data is reported as a percent of the total and 		 sample collecting the data displaying the collected data in an appropriate manner drawing conclusions to answer the question 			

		the sum of the percents is equal to 100%	
		SP03.02 Create and label a circle graph, with technology, to display a given set of data.	
		SP03.03 Find and compare circle graphs in a variety of print and electronic media, such as newspapers, magazines, and the Internet.	
		SP03.04 Translate percentages displayed in a circle graph into quantities to solve a given problem.	
		SP03.05 Interpret a given or constructed circle graph to answer questions.	
STATISTICS		 SP01 Students will be expected to demonstrate an understanding of central tendency and range by determining the measures of central tendency (mean, median, mode) and range determining the most appropriate measures of central tendency to report findings SP02 Students will be expected to determine the effect on the mean, 	
		median, and mode when an outlier is included in a data set.	
PROBABILITY	 SP04 Students will be expected to demonstrate an understanding of probability by identifying all possible outcomes of a probability experiment differentiating between experimental and theoretical probability determining the theoretical probability of outcomes in a probability experiment determining the experimental probability of outcomes in a probability of outcomes in a 	 SP04 Students will be expected to express probabilities as ratios, fractions, and percents. SP06 Students will be expected to conduct a probability experiment to compare the theoretical probability (determined using a tree diagram, table, or other graphic organizer) and experimental probability of two independent events. 	

 comparing experimental 		
results with the theoretical		
probability for an experiment		