MATHEMATICS 8
Structuring Competencies in a Definitive Budget of Work

GRADE	**8**			
GRADE LEVEL STANDARD	The learner demonstrates understanding of key concepts and principles of patterns and algebra (factors of polynomials, rational algebraic expressions, linear equations, inequalities in two variables, systems of linear equations in two variables); geometry (axiomatic structure of geometry, traingle congruence, inequalities in a triangle, and parallel and perpendicular lines) ; and statistics and probability (probability of simple events) as applied-using appropriate technology-in critical thinking, problem solving, reasoning, communicating, making connections, representations and decisions in real life. as applied-using appropriate technology-in critical thinking ,problem solving, communicating maiking connections, representations, and decisions in real life.			
	Grade 8 - FIRST QUARTER			
PERFORMANCE STANDARDS	The learner is able to formulate real-life problems involving factors of polynomials, rational algebraic expressions, linear equations and inequalities in two vraibles, systems of linear equations and inequalities in two variables and linear functions, and solve these problems accurately using a variety of strategies.			
CONTENT STANDARDS	The learner demonstrates understanding of key concepts of factors of polynomials, rational algebraic expressions, linear equations and inequalities in two variables, systems of linear equations and inequalities functions			
Content Areas/Strand	**Patterns and Algebra**			
	LEARNING COMPETENCIES	**CODE**	**NO. OF DAYS TAUGHT**	**REMARKS**
	The learner…			
	1. Factors completely different types of polynomials (polynomials with common monomial factor, difference of two squares, sum and difference of two cubes, perfect square trinomials, and general trinomials).	M8AL-Ia-1.0		
	1.1 factors completely polynomials with common monomial factor and difference of two squares.	M8AL-Ia-1.1	2	

	1.2 factors completely the sum and difference of two cubes and perfect square trinomials	M8AL-Ia-1.2	2	
	1.3 factors completely general trinomials	M8AL-Ib--1.3	2	
	2. Solves problems involving factors of polynomials.	M8AL-Ib-2.0		
	2.1 solves routine problems involving factors of polynomials.	M8AL-Ib-2.1	2	
	2.2 solves non-routine problems involving factors of polynomials.	M8AL-Ic-2.2	2	
	3. Illustrates rational algebraic expressions.	M8AL-Ic-3	1	
	4. Simplifies rational algebraic expressions.	M8AL-Ic-d- 4	2	
	5. Performs operations on rational algebraic expressions.	M8AL-Id-5.0		
	5.1 performs operations on rational algebraic expressions.	M8AL-Id-5.1	2	
	5.2 performs operations on rational algebraic expressions.	M8AL-Id-e-5.2	2	
	6. Solves problems involving rational algebraic expressions.	M8AL-Ie-6.0		
	6.1 solves routine problems involving rational algebraic	M8AL-Ie-6.1	2	
	6.2 solves non-routine problems involving rational algebraic	M8AL-Ie-f-6.2	2	
	7. Illustrates the rectangular coordinate system and its uses.	M8AL-If-7	1	
	8. Illustrates linear equations in two variables.	M8AL-If-8	1	
	9. Illustrates the slope of a line.	M8AL-If-9	1	
	10. Finds the slope of a line given two points, equation, and graph.	M8AL-Ig-10	1	
	11. Writes the linear equation ax + by = c in the form y = mx + b and vice versa	M8AL-Ig-11	1	
	12. Graphs a linear equation given (a) any two points; (b) the x – and y – intercepts; (c) the slope and a point on the line.	M8AL-Ig-12.0		
	12.1 graphs a linear equation given (a) any two points; (b) the x – and y – intercepts.	M8AL-Ig-12.1	1	
	12.2 graphs a linear equation given the slope and a point on the line.	M8AL-Ig-12.2	1	

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	13. Describes the graph of a linear equation in terms of its intercepts and slope.	M8AL-If-13	1	
	14. Finds the equation of a line given (a) two points; (b) the slope and a point; (c) the slope and its intercepts.	M8AL-If-14.0		
	14.1 finds the equation of a line given (a) two points; (b) the slope and a point	M8AL-If-14.1	1	
	14.2 finds the equation of a line given the slope and its intercepts.	M8AL-If-14.2	1	
	15. Solves problems involving linear equations in two variables.	M8AL-Ig-15	2	
	16. Illustrates a system of linear equations in two variables.	M8AL-Ig-16	1	
	17. Graphs a system of linear equations in two variables.	M8AL-Ig-17	1	
	18. Categorizes when a given system of linear equations in two variables has graphs that are parallel, intersecting, and coinciding.	M8AL-Ih-18	1	
	19. Solves a system of linear equations in two variables by (a) graphing; (b) substitution; (c) elimination.	M8AL-Ih-19.0		
	19.1 solves a system of linear equations in two variables by graphing	M8AL-Ih-19.1	2	
	19.2 solves a system of linear equations in two variables by (a) substitution; (b) elimination.	M8AL-Ih-i-19.2	2	
	20. Solves problems involving systems of linear equations in two variables.	M8AL-Ii-20.0		
	20.1 solves problems involving systems of linear equations in two variables	M8AL-Ii-20.1	2	
	20.2 creates problems involving systems of linear equations in two variables	M8AL-Ii-20.2	1	
QUARTERLY TEST			2	
TOTAL NUMBER OF DAYS			45	

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	Grade 8 -SECOND QUARTER			
PERFORMANCE STANDARDS	The learner is able to formulate and solve accurately real-life problems involving linear inequalities in tow variables, systems of linear inequalities in two variables, and linear functions.			
CONTENT STANDARDS	The learner demonstrates key concepts of linear inequalities in two variables, systems of linear inequalities in two variables and linear functions			
Content Areas/Strand	**Patterns and Algebra**			
	LEARNING COMPETENCIES	**CODE**	**NO. OF DAYS TAUGHT**	**REMARKS**
	21. Illustrates linear inequalities in two variables.	M8AL-IIa-21	1	
	22. Differentiates linear inequalities in two variables from linear equations in two variables.	M8AL-IIa-22	1	
	23. Graphs linear inequalities in two variables.	M8AL-IIa-23.0		
	23.1 learns how to graph linear inequalities like y≤4x +3	M8AL-IIa-23.1	2	
	23.2 graphs linear inequalities from slope intercept forms and standard forms	M8AL-IIb-23.2	2	
	24. Solves problems involving linear inequalities in two variables.	M8AL-IIb-24	2	
	25. Solves a system of linear inequalities in two variables.	M8AL-IIc-25	2	
	26. Solves problems involving systems of linear inequalities in two variables.	M8AL-IIc-26	2	
	27. Illustrates a relation and a function.	M8AL-IId-27	1	
	28. Verifies if a given relation is a function.	M8AL-IId-28	1	
	29. Determines dependent and independent variables.	M8AL-IId-29	1	
	30. Finds the domain and range of a function.	M8AL-IId-30.0		
	30.1 finds the domain of a function	M8AL-IId-30.1	1	

	30.2 finds the range of a function	M8AL-IIe-30.2	1	
	30.3 finds the domain and range of a function	M8AL-IIe-30.3	1	
	31. Illustrates a linear function.	M8AL-IIe-31	1	
	32. Graphs a linear function's (a) domain; (b) range; (c) table of values; (d) intercepts; and (e) slope	M8AL-IIe-f-32	3	
	33. Solves problems involving linear functions.	M8AL-IIf-g-33	3	
PERFORMANCE STANDARDS	The learner is able to communicate mathematical thinking with coherence and clarity in formulating and analyzing arguments.			
CONTENT STANDARDS	The learner demonstrates understanding of key concepts of logic and reasoning.			
Content Areas/Strand	**Geometry**			
	34. Determines the relationship between the hypothesis and the conclusion of an if-then statement.	M8AL-IIg-34	1	
	35. Transforms a statement into an equivalent if-then statement	M8GE-IIg-35	2	
	36. Determines the inverse, converse, and contrapositive of an if-then statement.	M8GE-IIh-36	2	
	37. Illustrates the equivalences of : (a) the statement and its contrapositivie; and (b) the converse and inverse of a statement.	M8GE-IIh-37	2	
	38. Uses inductive or deductive reasoning in an argument.	M8GE-IIi-38	2	
	39.Writes a proof (both direct and indirect).	M8GE-IIi-j-39.0		
	39.1 writes an indirect proof	M8GE-IIi-j-39.1	5	
	39.2 writes a indirect proof	M8GE-Ij-k39.2	4	
QUARTERLY TEST			2	
TOTAL NUMBER OF DAYS			45	

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	Grade 8 - THIRD QUARTER			
PERFORMANCE STANDARDS	The learner is able to 1) formulate an organized plan to handlea real-life situation; 2) communicate mathematical thinking with coherence and clarity in formulating, investigating ,analyzing and solving real-life problems involving congruent.			
CONTENT STANDARDS	The learner demonstrates understanding of key concepts of axiomatic structure of geometry and triangle congruence			
Content Areas/Strand	**Geometry**			
	LEARNING COMPETENCIES	**CODE**	**NO. OF DAYS TAUGHT**	**REMARKS**
	40. Describes a mathematical system			
	40.1 illsutrates and defines mathematical system	M8GE-IIIa-40.1	1	
	40.2 discusses parts of mathematical system	M8GE-IIIa-40.2	1	
	41. Illustrates the need for an axiomatic structure of a mathematical system in general, and in Geometry in particular: (a)defined terms; (b) undefined terms; (c) postulates; and (d) theorems.	M8GE-IIIa-41.0		
	41.1 illustrates the need for an axiomatic structure of a mathematical system in general	M8GE-IIIa-41.1	2	
	41.2 illustrates the need for an axiomatic structure of a mathematical system in general, and in Geometry in particular: (a)defined terms; (b) undefined terms;	M8GE-IIIb-41.2	2	
	41.3 illustrates the need for an axiomatic structure of a mathematical system in general, and in Geometry in particular: (c) postulates; and (d) theorems.	M8GE-IIIb-41.3	2	
	42. Illustrates triangle congruence. ***	M8GE-IIIc-42.0		
	42.1 discusses the idea of congruence	M8GE-IIIc-42.1	2	

	42.2 uses properties of congruence in identifying congruent parts and congruent figures	M8GE-IIIc-42.2	2	
	42.3 illustrate triangle congruence	M8GE-IIId-42.3	1	
	42.4 solves problems involving congruent parts and congruent figure	M8GE-IIId-42.4	1	
	43. Illustrates the SAS, ASA and SSS congruence postulates.	M8GE-IIId-43.0		
	43.1 illustrates inductive skills to prove congruence between triangles	M8GE-IIId-43.1	2	
	43.2 illustrates the SAS and ASA congruence postulates.	M8GE-IIIe-43.2	2	
	43.3 illustrates the SSS and SAA congruence postulates.	M8GE-IIIe-43.3	2	
	44. Solves corresponding parts of congruent triangles.	M8GE-IIIf-44	4	
	45. Proves two triangles are congruent	M8GE-IIIg-45.0		
	45.1 proves the congruence of triangles using SAS and ASA Postulates	M8GE-IIIg-45.1	2	
	45.2 proves the congruence of triangles using SSS and SAA Postulates	M8GE-IIIg-45.2	2	
	45.3 proves congruence properties in an isosceles triangle	M8GE-IIIh-45.3	2	
	45.4 uses the conditions of triangle congruence to prove congruent segments and congruent angles	M8GE-IIIh-45.4	2	
	45.5 proves theorems on isosceles triangle	M8GE-IIIi-45.5	2	
	45.6 proves theorems on right triangle	M8GE-IIIi-45.6	2	
	46. Proves statements on triangle congruence	M8GE-IIIj-46	4	
	47. Applies triangle congruence to construct perpendicular lines and angle bisectors.	M8GE-IIIk-47	3	
QUARTERLY TEST			2	
TOTAL NUMBER OF DAYS			**45**	

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Grade 8 - FOURTH QUARTER				
PERFORMANCE STANDARDS	The learner is able to communicate mathematical thinking with coherence and clarity in formulating, investigating, analyzing, and solving real-life problems involving triangle inequalities, and parallelism and perpendicularity of lines using appropriate and accurate representations.			
CONTENT STANDARDS	The learner demonstrates understanding of key concepts of inequalities in a triangle, and parallel and perpendicular lines.			
Content Areas/Strand	**Geometry**			
	LEARNING COMPETENCIES	**CODE**	**NO. OF DAYS TAUGHT**	**REMARKS**
	48. Illustrates theorems on triangle inequalities (Exterior Angle Inequality Theorem, Triangle Inequality Theorem, Hinge Theorem).* **	M8GE-IVa-48.0		
	48.1 illustrates theorems on triangle inequalities (Exterior Angle Inequality Theorem).***	M8GE-IVa-48.1	2	
	48. 2 illustrates theorems on triangle inequalities (Triangle Inequality Theorem).***	M8GE-IVa-48.2	2	
	48.3 illustrates theorems on triangle inequalities (Hinge Theorem).***	M8GE-IVb-48.3	2	
	49. Applies theorems on triangle inequalities.	M8GE-IVb-c-49	4	
	50. Proves inequalities in a triangle	M8GE-IVc-50	4	
	51. Proves properties of parallel lines cut by a transversal. * **	M8GE-IVd-51.0		
	51.1 illustrates Corresponding Angles Postulates	M8GE-IVd-51.1	1	
	51.2 proves different theorems on angles formed by parralel lines cut by a transversal	M8GE-IVd-51.2	2	
	51.3 solves routine problems involving properties of parallel lines cut by a transversal	M8GE-IVd-e-51.3	2	

	51.4 solves non- routine problems involving properties of parallel lines cut by a transversal	M8GE-IVe-51.4	2	
	52. Determines the conditions under which lines and segments are parallel or perpendicular.	M8GE-IVe-f-52.0		
	52.1 determines the conditions under which lines and segments are parallel .	M8GE-IVe-f-52.1	2	
	52.2 determines the conditions under which lines and segments are perpendicular.	M8GE-IVf-52.2	2	
PERFORMANCE STANDARDS	The learner is able to formulate and solve practical problems involving probability of simple events.			
CONTENT STANDARDS	The learner demonstrates understanding of key concepts of probability.			
Content Areas/Strand	**Statistics and Probability**			
	53. Illustrates an experiment, outcome, sample space and event.* **	M8SP-IVg-53.0		
	53.1 illustrates an experiment, outcome, sample space and event.***	M8SP-IVg-53.1	2	
	53.2 describes an outcome, sample space and event.***	M8SP-IVg-53.2	2	
	54. Counts the number of occurrences of an outcome in an experiment: (a) table; (b) tree diagram; (c) systematic listing; and (d) fundamental counting principle.* **	M8SP-IVh-54.0		
	54. 1 counts the number of occurrences of an outcome in an experiment: (a) table; (b) tree diagram; .***	M8SP-IVh-54.1	2	
	54.2 counts the number of occurrences of an outcome in an experiment: (c) systematic listing; and (d) fundamental counting principle.***	M8SP-IVh-54.2	2	
	55. Finds the probability of a simple event.	M8SP-IVi-55	2	

	56. Illustrates an experimental probability and a theoretical probability.	M8SP-IVi-56.0		
	56. 1 illustrates an experimental probability	M8SP-IVi-56.1	2	
	56.2 illustrates a theoretical probability.	M8SP-IVi-56.2	2	
	57. Solves problems involving probabilities of simple events.	M8SP-IVj-57.0		
	57.1 solves routine problems involving probabilities of simple events.	M8SP-IVj-57.1	2	
	57.2 solves non-routine problems involving probabilities of simple events.	M8SP-IVj-57.2	2	
QUARTERLY TEST			2	
TOTAL NUMBER OF DAYS			**45**	