



MATHEMATICS

Grade 9

**Three-Term Budget Of Work (BOW)
for Learning Competencies**

GENERAL MATHEMATICS

Grade 9

Three-Term Budget Of Work For Learning Competencies

First Term	
Content Standard	The learners should have knowledge and understanding of... • simple geometric concepts and notations • perpendicular and parallel lines, and angles formed by parallel lines cut by a transversal • relations and functions • graphs of linear functions, and the identification of domain and range, slope, intercepts, and zeros • parallelism and perpendicularity of lines • different quadrilaterals and their properties
Performance Standard	By the end of the term, the learners are able to... • illustrate and describe points, lines, rays, line segments, angles, and planes. • construct perpendicular and parallel lines. • determine the measure of the angles formed by parallel lines cut by a transversal. • identify relations and functions. • graph a linear function and identify the domain and range, intercepts, slope, and zeros. • determine the conditions for lines to be parallel or perpendicular. • use geometric properties to find unknown sides and angles of quadrilaterals.
Week	Learning Competency
1	Measurement and Geometry • Illustrate and describe point, line, ray, line segment, angle, and plane using models and geometric

	notations. Construct perpendicular and parallel lines.
2	Measurement and Geometry - Identify the relationships between angles formed by parallel lines cut by a transversal. - Determine angle measures involving angle pairs, parallel and perpendicular lines, and parallel lines cut by a transversal.
3 to 4	Number and Algebra - Identify relations that are functions based on the definitions of relations and functions. - Determine the domain and the range of a function expressed in different representations. - Express the relationship between two variables as a function. - Determine the slopes (as rate of change) and the zeros of linear functions represented in: - graphs - equations - tables of values
5	Number and Algebra - Graph a linear function and determine its: - domain - range - intercepts - slope - Represent linear relationships found in real-life situations using different representations.
6	Number and Algebra Solve problems involving linear functions.
	Measurement and Geometry Determine conditions that guarantee parallelism and perpendicularity of lines.

7 to 8	Measurement and Geometry • Classify quadrilaterals based on formal definitions. • Use properties of parallelograms to find measures of angles, sides, perpendicular height, and diagonals.
9	Measurement and Geometry • Solve problems involving parallelograms, rectangles, squares, or rhombuses by applying their different properties.
10	Measurement and Geometry • Prove properties of parallelograms by applying the relevant theorems.

Second Term	
Content Standard	The learners should have knowledge and understanding of... • different quadrilaterals and their properties (same in 1T) • congruence of triangles • congruence proofs • quadratic equations and graphs of quadratic functions • the solution of quadratic equations
Performance Standard	By the end of the term, the learners are able to... • use geometric properties to find unknown sides and angles of quadrilaterals. • apply the triangle congruence postulates and theorems. • construct and justify the construction of segments, angles, and triangles. • construct proofs of the congruence of triangles. • represent quadratic relationships. • interpret features of a parabola. • express quadratic functions in different forms. • sketch the graph of a quadratic function. • solve quadratic equations.
Week	Learning Competency
1 to 2	Measurement and Geometry • Derive the properties of trapezoids and kites by exploring the relationship between their parts and secondary parts. • Solve problems on trapezoids and kites by applying their properties. • Distinguish inductive and deductive reasoning for establishing proofs.
3	Measurement and Geometry

	- State postulates and theorems about defined and undefined terms in geometry, and formulates proofs involving them. - Use the triangle congruence postulates and theorems to illustrate congruence of triangles, including CPCTC (definition of congruent triangles).
4	Measurement and Geometry Solve problems involving right triangle congruence theorems, isosceles triangle theorem, perpendicular bisector theorem, and midline theorem.
5	Measurement and Geometry - Construct and justify the construction of segments, angles and triangles, including, but not limited to, the triangle's secondary parts and centers, using the triangle congruence postulates and theorems. - Construct congruence proofs involving triangles or corresponding parts of triangles using a two-column proof.
6	Number and Algebra - Represent real-life situations that can be modelled using quadratic relationships - Graph equations in two variables to represent quadratic relationships, such as $y=ax^2$, $y=ax^2+b$, $y=a(x-b)^2$.
7	Number and Algebra - Interpret features of a parabola such as vertex, axis of symmetry, x-intercepts, opening direction, minimum or maximum value, zeros, and increasing and decreasing intervals. - Transform the quadratic functions $y=ax^2$, $y=ax^2+b$, $y=a(x-b)^2$ and $y=ax^2+bx+c$ into the form $y=a(x-h)^2+k$ and vice versa.
8	Number and Algebra - Sketch the graph of quadratic functions expressed in equation form. - Analyze the effect of changing the values of the parameters on the behavior of its graph and on the

	properties of the quadratic function $y=a(x-h)^2+k$.
9	Number and Algebra - Find the zeros of quadratic functions in factored and standard form, graphically and algebraically. - Solve quadratic equations by: - extracting square roots - factoring - using the quadratic formula
10	Number and Algebra Solve problems involving quadratic functions and equations.

Third Term	
Content Standard	The learners should have knowledge and understanding of... • similarity of polygons • special triangles • direct and inverse variation • triangle theorems and triangle inequality theorems • the trigonometric ratios and their application • interpretation and analysis of data to assess whether the data may be misleading • probabilities of simple and compound events
Performance Standard	By the end of the term, the learners are able to... • illustrate and apply similarity of polygons, including triangles. • apply direct and inverse variation. • apply triangle theorems and triangle inequality theorems. • apply trigonometric ratios to solve right triangles. • interpret and analyze data to assess whether the data may be misleading. • determine the probabilities of simple and compound events.
Week	Learning Competency
1	Measurement and Geometry • Illustrate similarity of polygon • Illustrate and apply triangle similarity theorems in different situations.
2 to 3	Measurement and Geometry • Solve problems involving triangle similarity. • Solve problems involving measures of sides and angles of special triangles (30-60-90, 45-45-90).

	Number and Algebra Illustrate real-life situations that involve direct variation and real-life situations that involve inverse variation.
4	Number and Algebra - Translate a relationship between two quantities into a variation statement and/or a mathematical equation, given a table of values or a graph. - Solve problems involving variation.
5 to 7	Measurement and Geometry - Solve problems involving the perpendicular bisector theorem, isosceles triangle theorem, theorems on equilateral triangles, and the midline theorem. - Explain theorems on triangle inequalities and apply these theorems in comparing measures in a triangle. - Determine the values of the sine, cosine, and tangent trigonometric ratios corresponding to the angles of the special triangles. - Find the values of the sine, cosine, and tangent ratios of any acute angle. - Use the trigonometric ratios in solving right triangles.
8	Measurement and Geometry - Illustrate angles of elevation and angles of depression. - Solve real-life problems involving right triangles through the application of the trigonometric ratios.
9	Data and Probability - Interpret and analyze data from the digital media that are in tabular or graphical form to assess whether the data may be misleading. - Illustrate simple and compound events.
10	Data and Probability Determine the probabilities of simple and compound events.

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| | <ul style="list-style-type: none">• Solve problems involving probabilities of simple and compound events. |
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