

DAILY LESSON LOG OF M9GE-IVf-g-1(Day Three)

School		Grade Level	Grade 9
Teacher		Learning Area	Mathematics
Teaching Date and Time		Quarter	Fourth
I. OBJECTIVES	<i>Objectives must be met over the week and connected to the curriculum standards. To meet the objectives, necessary procedures must be followed and if needed, additional lessons, exercises and remedial activities may be done for developing content knowledge and competencies. These are assessed using Formative Assessment Strategies. Valuing objectives support the learning of content and competencies and enable children to find significance and joy in learning the lessons. Weekly objectives shall be derived from the curriculum guides.</i>		
A. Content Standards	The learner demonstrates understanding of the basic concepts of trigonometry.		
B. Performance Standards	The learner is able to apply the concepts of trigonometric ratios to formulate and solve real-life problems with precision and accuracy.		
C. Learning Competencies/ Objectives	Learning Competency: Illustrates laws of sines and cosines (M9GE-IVf-g-1) Learning Objectives: 1. State the law of sines 3. Illustrate the law of sines 3. Appreciate the importance the law of sine in solving problems involving oblique triangles		
II. CONTENT	Illustrating the Law of Sines		
III. LEARNING RESOURCES			
A. References	Teacher’s guide, Learner’s module Nivera, G., et. al. (2013). Grade 9 Mathematics Patterns and Practicalities. Don Bosco Press, Inc. Makati City. Oronce, O.& Mendoza, M.(2014). e-math 9. Rex Bookstore, Inc. Sampaloc, Manila.		
1. Teacher’s Guide pages			
2. Learner’s Materials pages	pp. 477-496		
3. Textbook pages	Grade 9 Mathematics Patterns and Practicalities: pp. 468 – 478 e-math 9: pp. 412-420		
4. Additional Materials from Learning Resource (LR) portal			
B. Other Learning Resources /Materials	Activity sheets, instructional materials, scientific calculator		
IV. PROCEDURES	<i>These steps should be done across the week. Spread out the activities appropriately so that pupils/students will learn well. Always be guided by demonstration of learning by the pupils/ students which you can infer from formative assessment activities. Sustain learning systematically by providing pupils/students with multiple ways to learn new things, practice the learning, question their learning processes, and draw conclusions about what they learned in relation to their life experiences and previous knowledge. Indicate the time allotment for each step.</i>		
A. Review previous lesson or presenting the new lesson	The teacher lets the students recall previous lesson by asking the following questions: 1. State the formula of the Law of Sines. 2. What are the cases or given information of an oblique triangle where we can use the Law of Sines? <i>Answer Key:</i> 1. In any $\triangle ABC$, $\frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c}$ 2. We can use the law of sines in solving an oblique triangle if the following information are given: ☐ two angles and one side (SAA Case & ASA Case) ☐ two sides and an angle opposite one of these sides (SSA case)		

B. Establishing a purpose for the lesson	The teacher lets the students realize that there are some real life problems that involve oblique triangles. And since these triangles do not contain right angles, using the trigonometric ratios involving right triangle is not applicable to these types of triangles. These types of triangles can be solved using either the law of sines or the law of cosines. The law of sines is applicable to solve oblique triangles if the following informations are given: ☐ two angles and one side (SAA Case & ASA Case) ☐ two sides and an angle opposite one of these sides (SSA case)
C. Presenting examples/ instances of the new lesson	The teacher discusses how to use law of sines in solving oblique triangles when two sides and an angle opposite one of these sides (SSA case) are given. He/she explains that this given information of an oblique triangle will lead you to the following possibilities: ☐ If $\angle A$ is an acute angle, and $a \geq b$, then there is exactly one solution. ☐ If $\angle A$ is an acute angle, $a < b$, and $a = b \sin A$, then there is exactly one solution. ☐ If $\angle A$ is an obtuse or right angle, and $a > b$, then there is exactly one solution. ☐ If $\angle A$ is an acute angle, and $a < b$, and $a > b \sin A$, then there two solutions. ☐ If $\angle A$ is an acute angle, and $a < b$, and $a < b \sin A$, then there no solutions. ☐ If $\angle A$ is an obtuse or right angle and $a \leq b$, then there is exactly no solution. He/she explains thoroughly the illustrative example found on page 484-488 of the learner’s module.
D. Discussing new concepts and practicing new skills #1	The teacher lets the students, by pair, answer the activity below. Directions: Find how many triangles can be formed in each case. $m\angle C = 47^\circ$ $c = 20$ $a = 13$ $m\angle B = 97^\circ$ $b = 45$ $a = 39$ $m\angle A = 90^\circ$ $a = 21$ $c = 32$ $m\angle B = 12^\circ$ $c = 8$ $c = 12$ Answer Key: - One triangle is formed since $\angle C$ is acute and $c \geq a$. - One triangle is formed since $\angle B$ is obtuse and $b > a$. - No triangle formed since $\angle A$ is a right angle and $a \leq c$. - This is the ambiguous case. There are two solutions because $\angle B$ is acute and $b > c \sin B$.
E. Discussing new concepts and practicing new skills #2	The teacher discusses with the students the answers. He/she calls some representatives to write the answer on the board.
F. Developing mastery (leads to formative assessment 3)	
G. Finding practical applications of concepts and skills in daily living	
H. Making generalizations and abstractions about the lesson	The lets the students summarize the lesson by asking the following questions: - State the formula of the Law of Sines. - What are the cases or given information of an oblique triangle where we can use the Law of Sines? - In solving oblique triangles when two sides and an angle opposite one of these sides (SSA case) are given. What are the possible outcomes of the solutions? Answer Key: - In any $\triangle ABC$, $\frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c}$

	2. We can use the law of sines in solving an oblique triangle if the following information are given: ☐ two angles and one side (SAA Case & ASA Case) ☐ two sides and an angle opposite one of these sides (SSA case) 3. In solving oblique triangles when two sides and an angle opposite one of these sides (SSA case) are given. The following are the possible outcomes: ☐ If $\angle A$ is an acute angle, and $a \geq b$, then there is exactly one solution. ☐ If $\angle A$ is an acute angle, $a < b$, and $a = b \sin A$, then there is exactly one solution. ☐ If $\angle A$ is an obtuse or right angle, and $a > b$, then there is exactly one solution. ☐ If $\angle A$ is an acute angle, and $a < b$, and $a > b \sin A$, then there two solutions. ☐ If $\angle A$ is an acute angle, and $a < b$, and $a < b \sin A$, then there no solutions. ☐ If $\angle A$ is an obtuse or right angle and $a \leq b$, then there is exactly no solution.
I. Evaluating Learning	The teacher lets the students answer the following activity with a partner. Directions: Draw a sketch of the given triangle and solve for each remaining parts. $\triangle ABC$, given $b = 16$, $c = 20$, $m\angle B = 28^\circ$. Answer Key: Case 1: $m\angle A = 116^\circ$ $a = 31$ $m\angle B = 28^\circ$ $a = 16$ $m\angle C = 36^\circ$ $a = 31$ Case 2: $m\angle A = 8^\circ$ $a = 5$ $m\angle B = 28^\circ$ $a = 16$ $m\angle C = 144^\circ$ $a = 20$
J. Additional activities or remediation	
V. REMARKS	
VI. REFLECTION	
A. No. of learners who earned 80% of the evaluation	
B. No. of learners who require additional activities for remediation who scored below 80%	
C. Did the remedial lesson work? No. of learners who have caught up with the lesson.	

D. No. of learners who continue to require remediation	
E. Which of my teaching strategies worked well? Why did these work?	
F. What difficulties did I encounter which my principal or supervisor can help me solve?	
G. What innovation or localized materials did I use/ discover which I wish to share with other teachers	

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