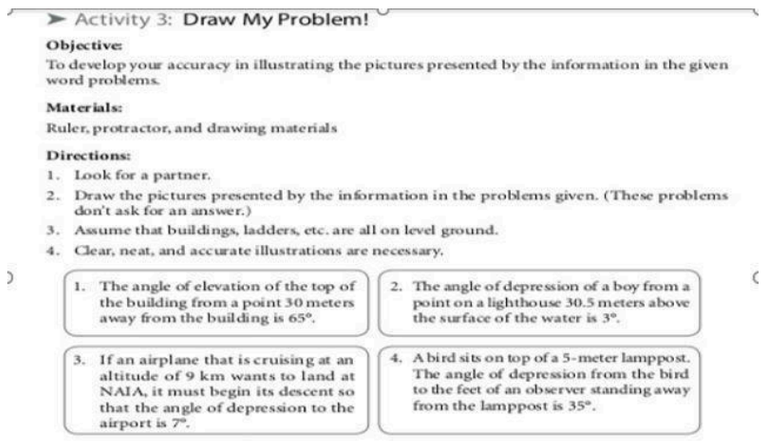
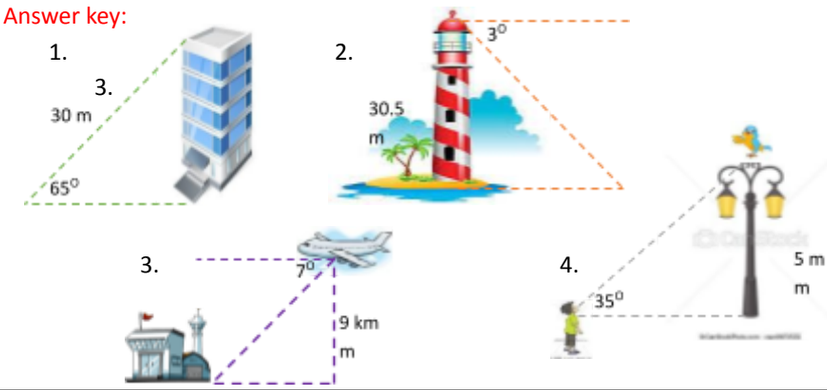
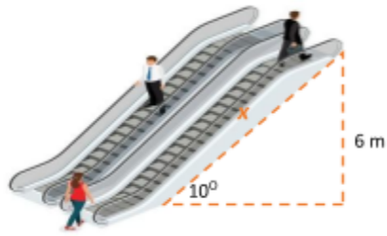
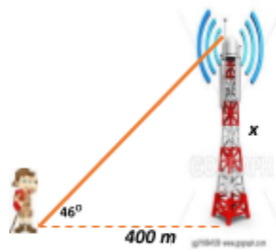
DAILY LESSON LOG OF M9GE–IVe–1 (DAY TWO)

School		Grade Level	**9**
Teacher		Learning Area	**MATHEMATICS**
Teaching Date and Time		Quarter	**Fourth (4th)**

I. OBJECTIVES	*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.*
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: Use trigonometric ratios to solve real-life problems involving right triangles. (M9GE–IVe–1) 1. Identify the trigonometric ratios used to solve real-life situations or problems. 2. Solve for the measures of the unknown sides and angles of right triangle Use trigonometric ratios. 3. Shows interest in doing the tasks.
II. CONTENT	Solving Real-life Problems Using Trigonometric Ratios on a Right Triangles.
III. LEARNING RESOURCES	
A. References	
1. Teacher's Guide pages	Pages 292-297
2. Learner's Materials pages	Pages 460-464
3. Textbook pages	Empowering through Math by C. Dacanay pages 289-295 Grade 9 Mathematics by G. Nivera and M.R. Lapinid pages 449-460
4. Additional Materials from Learning Resource (LR) portal	
B. Other Learning Resources	Activity sheets for dependent learning and Worksheets for independent learning,
IV. PROCEDURES	*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.*
A. Review previous lesson or presenting the new lesson	• As a review, the teacher asks the students, in group of three, answer the activity items 1 – 4 found on page 462 of the Learner's Module.  Activity 3: Draw My Problem! **Objective:** To develop your accuracy in illustrating the pictures presented by the information in the given word problems. **Materials:** Ruler, protractor, and drawing materials **Directions:** 1. Look for a partner. 2. Draw the pictures presented by the information in the problems given. (These problems don't ask for an answer.) 3. Assume that buildings, ladders, etc. are all on level ground. 4. Clear, neat, and accurate illustrations are necessary. 1. The angle of elevation of the top of the building from a point 30 meters away from the building is 65°. 2. The angle of depression of a boy from a point on a lighthouse 30.5 meters above the surface of the water is 3°. 3. If an airplane that is cruising at an altitude of 9 km wants to land at NAIA, it must begin its descent so that the angle of depression to the airport is 7°. 4. A bird sits on top of a 5-meter lamppost. The angle of depression from the bird to the feet of an observer standing away from the lamppost is 35°. Answer key:  1. 30 m 65° 2. 3° 30.5 m 3. 7° 9 km m 4. 35° 5 m m

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B. Establishing a purpose for the lesson	• The teacher lets the students realize that illustrating the angle of elevation and angle of depression is an important skill in solving real-life problems involving right triangles.
C. Presenting examples/ instances of the new lesson	• The teacher lets the students, in groups of three, do the Activity 4: Illustrate and Solve! found on pages 463 – 464 of the Learner's Module. ➢ Activity 4: **Illustrate and Solve!** Look for a partner, then illustrate and solve the following problems. Use the template below. Draw the diagram. What is/are given? What is to be determined? Formula used Solution **Problems:** 1. A 12-meter high post casts a 19-meter shadow. Find the angle of elevation to the sun. 2. The angle of elevation from a boat to the top of a 92-meter hill is 12°. How far is the boat from the base of the hill? 3. From the top of the control tower 250 m tall, an airplane is sighted on the ground below. If the airplane is 170 m from the base of the tower, find the angle of depression of the airplane from the top of the control tower. 4. From the top of a cliff 280 meters high, the angle of depression of a boat is 25°. How far from the base of the cliff is the boat? 5. From an airplane at an altitude of 1200 m, the angle of depression to a rock on the ground measures 28°. Find the horizontal distance from the plane to the rock. Answer Key: 1. 12 m, θ, 19 m $\tan\theta = \frac{\text{opposite}}{\text{adjacent}}$ $\tan\theta = \frac{12}{19}$ $\tan\theta = 0.6316$ $\theta = \tan^{-1} 0.6316$ $\theta = 32.28°$ $\theta = 32° 17'$ ∴ The angle of elevation of the sun is 32° 17' 2. 92 m, 12°, d $\tan 12° = \frac{\text{opposite}}{\text{adjacent}}$ $\tan 12° = \frac{92}{d}$ $d \tan 12° = 92$ $d = \frac{92}{\tan 12°}$ $d = \frac{92}{0.2126}$ $d = 432.83$ m ∴ The distance of the boat from the base of the hill is 432.83 meters. 3. 250 m, θ, θ, 170 m $\tan\theta = \frac{\text{opposite}}{\text{adjacent}}$ $\tan\theta = \frac{250}{170}$ $\tan\theta = 1.47$ $\theta = \tan^{-1} 1.47$ $\theta = 55.78°$ $\theta = 55°47'$ ∴ 55°47' The angle of depression of the rock from the top of the control tower is 55° 47'. 4. 280 m, 25°, 25°, d $\tan 25° = \frac{\text{opposite}}{\text{adjacent}}$ $\tan 25° = \frac{280}{d}$ $d = \frac{280}{\tan 25°}$ $d = \frac{280}{0.4663}$ $d = 600.47$ m ∴ The distance of the boat from the cliff is 600.47 meters. 5. 1200 m, 28°, 28°, d $\tan 28° = \frac{\text{opposite}}{\text{adjacent}}$ $\tan 28° = \frac{1200}{\tan 28°}$ $d = \frac{1200}{0.5317}$ $d = 2256.87$ m ∴ The distance of the rock from the plane is 2256.87 m meters. DRAFT arch 24, 201
D. Discussing new concepts and practicing new skills #1	• The teacher discusses with the students the process of arriving at the answer of each item. Furthermore, the teacher asks the students about the mathematical skills or principles that they used in solving real-life problem involving right triangle.
E. Discussing new concepts and practicing new skills #2	• Working in pairs, the teacher provides another activity using applying the angle of depression and elevation to solve real-life problem involving right triangle. Read, analyze and solve the problems below. Show your solution. Problem: 1. An escalator has an angle of elevation of 10^{O} and a vertical rise of 6 m. Find the length of the escalator.

	Answer Key: $\theta = \frac{opposite}{hypotenuse}$ $10^{O} = \frac{6}{x}$ $x = \frac{6}{\sin sin\ 10^{O}}$ $x = 34.55$  So, the length of the escalator is approximately 34.55 meters.
F. Developing mastery (leads to formative assessment 3)	● The teacher gives another activity for the students to perform individually. This will allow the students to demonstrate learning. Read, analyze and solve the problems below. Show your solution. 1. A hiker is 400 meters away from the base of the radio tower. The angle of elevation to the top of the tower is 46°. How high is the tower? 2. Answer Key: $\theta = \frac{opposite}{adjacent}$ $\tan tan\ 46^{O} = \frac{x}{400}$ $46^{O}) = x$ $= x$  Therefore, the height of the tower is approximately 414.21 meters.
G. Finding practical applications of concepts and skills in daily living	
H. Making generalizations and abstractions about the lesson	● The teacher summarizes the mathematical skills or principles used to solve problems on trigonometric ratios. ● What mathematical principles or skills did you use in solving the distance or length of an object and the angle formed from the two given objects? Applying the concept of angle of elevation and depression to the problem with the help of the six trigonometric ratios. ● Answers can be drawn from the students.
I. Evaluating Learning	● The teacher lets the students answer individually the formative assessment. Read, analyze, illustrate and solve the problem below. Show your solution. Problem: 1. An airplane is flying in a horizontal straight line towards an airport. Find its altitude at the moment when the angle of depression is 6^{O} and the plane is 100 miles away from its destination. Answer Key: Let θ the reference angle. $\sin sin\ \theta = \frac{opposite}{hypotenuse}$ $\sin sin\ 6^{O} = \frac{x}{100}$  $6^{O}) = x$ $= x$

1. Additional activities or remediation	
V. REMARKS	
VI. REFLECTION	*Reflect on your teaching and assess yourself as a teacher. Think about your students' progress. What works? What else needs to be done to help the pupils/students learn? Identify what help your instructional supervisors can provide for you so when you meet them, you can ask them relevant questions.*
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	