

 <b>GRADES 1 to 12 DAILY LESSON LOG</b>	<b>School</b>	Sauyo High School	<b>Grade Level</b>	Grade 10
	<b>Teacher</b>	Mr. Jonathan R. Bacolod, LPT	<b>Learning Area</b>	Mathematics
	<b>Teaching Dates and Time</b>	Week 5, July 1 – 5, 2019	<b>Quarter</b>	1st

<b>I. OBJECTIVES</b>	<b>DAY 1</b>	<b>DAY 2</b>	<b>DAY 3</b>	<b>DAY 4</b>	<b>DAY 5</b>
<b>Learning Competencies/ Objectives:</b>	1. Describe the steps in finding the geometric mean; 2. Compute the geometric mean of a given geometric sequence; and, 3. Show enjoyment and perseverance in solving problems.	1. Describe the steps in finding the sum of the terms of a finite geometric sequence; 2. Compute the sum of the terms of a finite geometric sequence; and, 3. Display independence and willingness in solving problems.	1. Tell the steps in finding the sum of the terms of an infinite geometric sequence; 2. Generate the sum of the terms of an infinite geometric sequence; and, 3. Display willingness and interest in solving problems.	1. Evaluate the steps in finding the geometric mean; 2. Calculate the geometric mean of a given geometric sequence; and, 3. Project interest and interest in solving problems.	1. Discuss the steps in finding the geometric mean; 2. Solve the geometric mean of a given geometric sequence; and, 3. Show interest and interest in solving problems.
<b>II. CONTENT</b>	<b>PATTERNS AND ALGEBRA</b>				
	<b>Geometric Means</b>	<b>Finite Geometric Series</b>	<b>Infinite Geometric Series</b>	<b>Harmonic Sequence</b>	<b>Fibonacci Sequence</b>
<b>III. LEARNING RESOURCES</b>					
<b>A. References</b>					
<b>1. Teacher's Guide Pages</b>	pp. 72–82	pp. 51–62	pp. 63–71	pp. 83–91	pp. 83–91
<b>2. Learner's Materials Pages</b>	pp. 43–49	pp. 31–37	pp. 38–42	pp. 50–54	pp. 50–54
<b>3. Textbook Pages</b>	pp. 60–69	pp. 43–52	pp. 53–59	pp. 70–76	pp. 70–76
<b>4. Additional Materials from Learning Resources Portal</b>					
<b>B. Other Learning Resources</b>	Flashcards	Flashcards	Flashcards	Flashcards	Flashcards
<b>IV. PROCEDURES</b>					

<b>A. Reviewing Previous Lesson or Presenting New Lesson</b>	<p style="text-align: center;"><b>Geometric Means</b></p> <p><b>Geometric Extremes:</b> the first and last terms of a geometric sequence</p> <p><b>Geometric Means:</b> the terms between the geometric extremes</p> <p><b>Mean Proportionality:</b> the geometric mean between two terms</p> <p>To solve for the mean proportionality of two terms <math>a</math> and <math>b</math>, use</p> $GM = \pm \sqrt{ab}$	<p style="text-align: center;"><b>Finite Geometric Series</b></p> <p><b>Finite Geometric Series:</b> the indicated sum of the terms of a geometric sequence</p> <p>If the last term <math>a_n</math> is not given, use</p> $S_n = \frac{a_1(1 - r^n)}{1 - r}, \quad r \neq 1$ <p>If the last term <math>a_n</math> is given, use</p> $S_n = \frac{a_1 - a_n r}{1 - r}, \quad r \neq 1$	<p style="text-align: center;"><b>Infinite Geometric Series</b></p> <p><b>Infinite Geometric Series:</b> a series of the form <math>a + ar + ar^2 + ar^3 + \dots + ar^{n-1} + \dots</math></p> <p>To find the sum of an infinite geometric sequence, use</p> $S = \frac{a}{1 - r}, \quad -1 < r < 1$	<p style="text-align: center;"><b>Harmonic Sequence</b></p> <p>Harmonic Sequence: a sequence of numbers whose reciprocals form an arithmetic sequence</p> <p>In symbols,</p> $\frac{1}{a_1}, \frac{1}{a_1 + d}, \frac{1}{a_1 + 2d}, \dots, \frac{1}{a_1 + (n-1)d}$	<p style="text-align: center;"><b>Fibonacci Sequence</b></p> <p><b>Fibonacci Sequence:</b> a sequence in which the terms are found by adding the two previous terms</p> <p>In symbols,</p> $F_n = F_{n-1} + F_{n-2}, \quad n > 2$
<b>B. Establishing a Purpose for the Lesson</b>	<p>The purpose of this lesson is to enable the students to solve real life problems involving geometric means.</p>	<p>The purpose of this lesson is to enable the students to solve real life problems involving finite geometric series.</p>	<p>The purpose of this lesson is to enable the students to solve real life problems involving infinite geometric series.</p>	<p>The purpose of this lesson is to enable the students to solve real life problems involving harmonic sequence.</p>	<p>The purpose of this lesson is to enable the students to solve real life problems involving fibonacci sequence.</p>

<p><b>C. Discussing New Concepts and Practicing New Skills #1</b></p>	<p><b>Practice Exercises</b></p> <p>A. Insert the specified number of geometric means.</p> <ol style="list-style-type: none"> <li>Two: 3 and 81</li> <li>Two: 16 and <math>-2</math></li> <li>Two: 2 and <math>-250</math></li> <li>Two: <math>-3</math> and 24</li> <li>One negative: 2 and 50</li> </ol>	<p><b>Practice Exercises</b></p> <p>A. Find the indicated sum of the following geometric series.</p> <ol style="list-style-type: none"> <li><math>1 + 4 + 16 + \dots S_6</math></li> <li><math>2 + 4 + 8 + 16 + \dots S_{10}</math></li> <li><math>2 + 6 + 18 + \dots S_7</math></li> <li><math>(-9) + 6 + (-4) + \dots S_8</math></li> <li><math>2 + 2\sqrt{2} + 4 + \dots S_{10}</math></li> </ol>	<p><b>Practice Exercises</b></p> <p>A. Determine if each geometric series has a sum. If the sum exists, find the sum.</p> <ol style="list-style-type: none"> <li><math>4 + 1\frac{1}{4} + \dots</math></li> <li><math>4 + 2 + 1 + \dots</math></li> <li><math>16 + 8 + 4 + 2 + \dots</math></li> <li><math>1 + \frac{1}{3} + \frac{1}{9} + \frac{1}{27} + \dots</math></li> <li><math>16 + 1.6 + 0.16 + \dots</math></li> </ol>	<p><b>Practice Exercises</b></p> <p>A. Write <i>Yes</i> if the sequence is harmonic. Otherwise, write <i>Not</i>.</p> <ol style="list-style-type: none"> <li><math>\frac{1}{5}, \frac{1}{8}, \frac{1}{11}</math></li> <li><math>\frac{1}{5}, \frac{1}{10}, \frac{1}{15}</math></li> <li><math>\frac{1}{2}, \frac{3}{8}, \frac{3}{10}</math></li> <li><math>\frac{1}{2}, \frac{1}{4}, \frac{1}{6}</math></li> <li><math>-\frac{1}{2}, \frac{1}{2}, \frac{1}{6}</math></li> </ol> <p>B. Find the specified term of each harmonic sequence.</p> <ol style="list-style-type: none"> <li><math>\frac{4}{3}, 2, 4, \dots a_7</math></li> <li><math>\frac{1}{3}, \frac{3}{10}, \frac{3}{11}, \dots a_9</math></li> <li><math>a_1 = 6, a_2 = 7, a_n = 25, n = ?</math></li> <li><math>a_1 = \frac{1}{15}, a_{10} = \frac{1}{27}, a_7 = ?</math></li> <li><math>a_8 = 4, a_{14} = \frac{4}{19}, a_{13} = ?</math></li> </ol>	<p><b>Practice Exercises</b></p> <p>Find the missing terms of each sequence.</p> <ol style="list-style-type: none"> <li>6, 6, 12, _____, _____</li> <li>0.3, 0.3, _____, _____</li> <li>5, 5, 10, _____, _____</li> <li><math>\sqrt{2}, \sqrt{2},</math> _____, _____</li> <li>6, _____, _____, 18, _____</li> </ol>
---	--	--	---	---	--

<b>D. Discussing New Concepts and Practicing New Skills #2</b>	<p>B. Find the missing terms of each geometric sequence.</p> <ol style="list-style-type: none"> <li>1. 3, _____, 27</li> <li>2. _____, 24, _____, _____, 3, _____</li> <li>3. <math>x</math>, _____, <math>x^2</math></li> <li>4. 81, _____, _____, _____, _____, <math>\frac{1}{3}</math></li> <li>5. _____, _____, <math>x^4</math>, <math>2x^7</math>, _____, _____</li> </ol>	<p>B. Find each specified term.</p> <ol style="list-style-type: none"> <li>1. <math>S_5 = \frac{31}{4}</math>; <math>r = \frac{1}{2}</math>; <math>a_1 = ?</math></li> <li>2. <math>S_8 = 2,550</math>; <math>r = 2</math>; <math>a_1 = ?</math></li> <li>3. <math>S_7 = 7,651</math>; <math>r = 3</math>; <math>a_1 = ?</math></li> <li>4. <math>S_{10} = 51,150</math>; <math>r = 2</math>; <math>a_1 = ?</math></li> <li>5. <math>S_6 = 126</math>; <math>r = -\frac{1}{2}</math>; <math>a_6 = ?</math></li> </ol>	<p>B. In each infinite geometric series, find the specified unknown.</p> <ol style="list-style-type: none"> <li>1. <math>S = 45</math>; <math>a_1 = 15</math>; <math>r = ?</math></li> <li>2. <math>S = 28</math>; <math>r = \frac{1}{7}</math>; <math>a_1 = ?</math></li> <li>3. <math>S = 80</math>; <math>r = \frac{1}{5}</math>; <math>a_1 = ?</math></li> <li>4. <math>S = \frac{1}{3}</math>; <math>a_1 = \frac{3}{10}</math>; <math>r = ?</math></li> <li>5. <math>S = \frac{4\sqrt{3}}{3}</math>; <math>r = \frac{1}{4}</math>; <math>a_1 = ?</math></li> </ol>	<p>C. Find the harmonic mean between the two given numbers.</p> <ol style="list-style-type: none"> <li>1. 40 and 60</li> <li>2. 80 and 120</li> <li>3. -30 and 60</li> <li>4. <math>-\frac{3}{7}</math> and <math>\frac{5}{6}</math></li> </ol>	
--	---	---	---	---	--

<p><b>E. Developing Mastery</b></p>	<p><b>Problem Set</b></p> <p>A. Insert the specified number of geometric means.</p> <ol style="list-style-type: none"> <li>Two: 128 and 16</li> <li>Three: −2 and −512</li> <li>Two: 4 and 32</li> <li>Three: 4 and 324</li> <li>One positive: −4 and −36</li> </ol> <p>B. Find the missing terms of each geometric sequence.</p> <ol style="list-style-type: none"> <li>2, _____, _____, 54</li> <li>_____, _____, _____, 8, 16</li> <li><math>x</math>, _____, _____, <math>y</math></li> <li>_____, _____, 9, _____, 1</li> <li>_____, <math>\frac{1}{3}</math>, 1, _____, _____</li> </ol>	<p><b>Problem Set</b></p> <p>A. Find the indicated sum of the following geometric series.</p> <ol style="list-style-type: none"> <li><math>9 + 6 + 4 + \dots S_7</math></li> <li><math>2 + 8 + 32 + \dots S_9</math></li> <li><math>3 + 3\sqrt{3} + 9 + \dots S_9</math></li> <li><math>1 + (-2) + 4 + (-8) \dots S_8</math></li> <li><math>(-2) + 6 + (-18) + \dots S_6</math></li> </ol> <p>B. Find the sum of the first <math>n</math> terms of the related geometric series.</p> <ol style="list-style-type: none"> <li><math>a_1 = \frac{1}{2}; r = 4; n = 6</math></li> <li><math>a_1 = 13; r = 4; n = 7</math></li> <li><math>a_1 = 318; r = \frac{1}{2}; n = 7</math></li> <li><math>a_1 = 168; r = \frac{3}{4}; n = 8</math></li> <li><math>a_1 = 4; r = -5; n = 8</math></li> </ol>	<p><b>Problem Set</b></p> <p>A. Determine if each geometric series has a sum. If the sum exists, find the sum.</p> <ol style="list-style-type: none"> <li><math>1 + (-\frac{1}{2}) + \frac{1}{4} + (-\frac{1}{8}) \dots</math></li> <li><math>4 + 2.4 + 1.44 + \dots</math></li> <li><math>6 + 2 + \frac{2}{3} + \frac{2}{9} + \dots</math></li> <li><math>(-5) + (-0.5) + (-0.05) + \dots</math></li> <li><math>1 + (-\frac{1}{3}) + \frac{1}{9} + (-\frac{1}{27}) + \dots</math></li> </ol> <p>B. In each infinite geometric series, find the specified unknown.</p> <ol style="list-style-type: none"> <li><math>S = -10; a_1 = -5; r = ?</math></li> <li><math>S = -52; a_1 = -65; r = ?</math></li> <li><math>S = -\frac{2}{5}; a_1 = -\frac{1}{4}; r = ?</math></li> <li><math>S = -36; a_1 = -60; r = ?</math></li> <li><math>S = 384; r = \frac{1}{3}; a_1 = ?</math></li> </ol>	<p><b>Problem Set</b></p> <p>A. Write <i>Yes</i> if the sequence is harmonic. Otherwise, write <i>Not</i>.</p> <ol style="list-style-type: none"> <li><math>\frac{1}{3}, \frac{2}{3}, 1</math></li> <li><math>\frac{1}{4}, \frac{1}{7}, \frac{1}{9}</math></li> <li><math>\frac{1}{8}, \frac{3}{8}, \frac{5}{11}</math></li> <li><math>\frac{4}{7}, \frac{1}{2}, \frac{3}{2}</math></li> <li><math>\frac{1}{5}, \frac{6}{5}, \frac{11}{5}</math></li> </ol> <p>B. Find the specified term of each harmonic sequence.</p> <ol style="list-style-type: none"> <li><math>\frac{1}{2}, \frac{1}{4}, \frac{1}{6}, \dots a_7</math></li> <li><math>\frac{1}{5}, \frac{1}{10}, \frac{1}{15}, \dots a_{10}</math></li> <li><math>\frac{1}{4}, \frac{1}{11}, \frac{1}{18}, \dots a_9</math></li> <li><math>-\frac{1}{10}, -\frac{1}{3}, \frac{1}{4}, \dots a_{14}</math></li> <li><math>1, \frac{2}{3}, \frac{1}{2}, \frac{2}{5}, \dots a_{10}</math></li> </ol> <p>C. Find the harmonic mean between the two given numbers.</p> <ol style="list-style-type: none"> <li>20 and 4</li> <li>10 and 5</li> <li>15 and 45</li> <li>9 and 25</li> </ol>	<p><b>Problem Set</b></p> <p>Find the missing terms of each sequence.</p> <ol style="list-style-type: none"> <li>2, 2, 4, _____, _____</li> <li>0.2, 0.2, _____, _____</li> <li><math>\frac{1}{4}, \frac{1}{4}, \frac{1}{2}, \dots, \dots</math></li> <li>5x, _____, 10x, _____</li> <li>_____, <math>\frac{3}{2}, \dots, \frac{9}{2}, \frac{15}{2}</math></li> <li>_____, 2, 3, 5, _____, _____</li> <li>0.5, _____, 1, _____, _____</li> <li><math>\frac{1}{16}, \frac{1}{16}, \dots, \dots</math></li> <li>3x, <math>-7x</math>, _____, _____, _____</li> <li>_____, <math>\frac{5}{3}, \dots, 5, \dots</math></li> </ol>
-------------------------------------	--	---	--	---	--

<b>F. Finding Practical Application of Concepts and Skills in Daily Living</b>	Let the students answer the following questions:  1. In what real life situations or problems can we observe some examples of geometric means?  2. How can you apply your knowledge of geometric means in solving these real life problems?	Let the students answer the following questions:  1. In what real life situations or problems can we observe some examples of finite geometric series?  2. How can you apply your knowledge of finite geometric series in solving these real life problems?	Let the students answer the following questions:  1. In what real life situations or problems can we observe some examples of infinite geometric series?  2. How can you apply your knowledge of infinite geometric series in solving these real life problems?	Let the students answer the following questions:  1. In what real life situations or problems can we observe some examples of harmonic sequence?  2. How can you apply your knowledge of harmonic sequence in solving these real life problems?	Let the students answer the following questions:  1. In what real life situations or problems can we observe some examples of fibonacci sequence?  2. How can you apply your knowledge of fibonacci sequence in solving these real life problems?
<b>G. Making Generalization and Abstractions about the Lesson</b>	Let the students answer the following questions:  1. In your own words, what are geometric means?  2. How do we solve problems involving geometric means?	Let the students answer the following questions:  1. In your own words, what are finite geometric series?  2. How do we solve problems involving finite geometric series?	Let the students answer the following questions:  1. In your own words, what are infinite geometric series?  2. How do we solve problems involving infinite geometric series?	Let the students answer the following questions:  1. In your own words, what are harmonic sequence?  2. How do we solve problems involving harmonic sequence?	Let the students answer the following questions:  1. In your own words, what are fibonacci sequence?  2. How do we solve problems involving fibonacci sequence?
<b>H. Evaluating Learning</b>					
<b>I. Additional Activities for Application or Remediation</b>					
<b>VI. REMARKS</b>	Objectives have been attained: ____ Objectives were not attained due to: _____	Objectives have been attained: ____ Objectives were not attained due to: _____	Objectives have been attained: ____ Objectives were not attained due to: _____	Objectives have been attained: ____ Objectives were not attained due to: _____	Objectives have been attained: ____ Objectives were not attained due to: _____
<b>VII. REFLECTION</b>					

<b>A. No. of learners who earned 80% in the evaluation</b>	10–Bohr: ____ out of ____ 10–Avogadro: ____ out of ____	10–Bohr: ____ out of ____ 10–Avogadro: ____ out of ____	10–Bohr: ____ out of ____ 10–Avogadro: ____ out of ____	10–Bohr: ____ out of ____ 10–Avogadro: ____ out of ____	10–Bohr: ____ out of ____ 10–Avogadro: ____ out of ____
<b>B. No. of learners who require additional activities for remediation who scored below 80%</b>	10–Bohr: ____ out of ____ 10–Avogadro: ____ out of ____	10–Bohr: ____ out of ____ 10–Avogadro: ____ out of ____	10–Bohr: ____ out of ____ 10–Avogadro: ____ out of ____	10–Bohr: ____ out of ____ 10–Avogadro: ____ out of ____	10–Bohr: ____ out of ____ 10–Avogadro: ____ out of ____
<b>C. Did the remedial lessons work? No. of learners who have caught up with the lesson</b>	10–Bohr: ____ 10–Avogadro: ____	10–Bohr: ____ 10–Avogadro: ____	10–Bohr: ____ 10–Avogadro: ____	10–Bohr: ____ 10–Avogadro: ____	10–Bohr: ____ 10–Avogadro: ____
<b>D. No. of learners who continue to require remediation</b>	10–Bohr: ____ 10–Avogadro: ____	10–Bohr: ____ 10–Avogadro: ____	10–Bohr: ____ 10–Avogadro: ____	10–Bohr: ____ 10–Avogadro: ____	10–Bohr: ____ 10–Avogadro: ____
<b>E. Which of my teaching strategies worked well? Why did these work?</b>					
<b>F. What difficulties did I encounter which my principal or supervisor can help me solve?</b>					
<b>G. What innovation or localized materials did I use/discover which I wish to share with other teachers?</b>					

Checked by:

DR. LORETO R. DOMINGO  
Head, Mathematics Department