GRADES 1 to 12 DAILY LESSON LOG	**School**	Sauyo High School	**Grade Level**	Grade 10
	Teacher	Mr. Jonathan R. Bacolod, LPT	**Learning Area**	Mathematics
	Teaching Dates and Time	Week 4, June 24 – 28, 2019	**Quarter**	1st

I. OBJECTIVES	**DAY 1**	**DAY 2**	**DAY 3**	**DAY 4**	**DAY 5**
Learning Competencies/ Objectives:	1. Derive the formula in computing arithmetic series; 2. Compute the number of terms of a given arithmetic series; and, 3. Display enjoyment and independence in solving problems.	1. Apply the steps in finding the rule of a given geometric sequence; 2. Generate the next terms of a geometric sequence; and, 3. Display determination and interest in solving problems.	1. Apply the steps in finding the rule of a given geometric sequence; 2. Generate the next terms of a geometric sequence; and, 3. Display enjoyment and interest in solving problems.	1. Apply the steps in finding the rule of a given geometric sequence; 2. Generate the next terms of a geometric sequence; and, 3. Display willingness and interest in solving problems.	1. Apply the steps in finding the rule of a given geometric sequence; 2. Generate the next terms of a geometric sequence; and, 3. Display perseverance and interest in solving problems.
II. CONTENT	**PATTERNS AND ALGEBRA**				
	Arithmetic Series	**Geometric Sequences**	**Finite Geometric Series**	**Infinite Geometric Series**	**Geometric Means**
III. LEARNING RESOURCES					
A. References					
1. Teacher's Guide Pages	pp. 31–41	pp. 42–50	pp. 51–62	pp. 63–71	pp. 72–82
2. Learner's Materials Pages	pp. 19–25	pp. 26–30	pp. 31–37	pp. 38–42	pp. 43–49
3. Textbook Pages	pp. 26–35	pp. 36–42	pp. 43–52	pp. 53–59	pp. 60–69
4. Additional Materials from Learning Resources Portal					
B. Other Learning Resources	Flashcards	Flashcards	Flashcards	Flashcards	Flashcards
IV. PROCEDURES					

A. Reviewing Previous Lesson or Presenting New Lesson	**Arithmetic Series**	**Geometric Sequences**	**Finite Geometric Series**	**Infinite Geometric Series**	**Geometric Means**

	Arithmetic Series: the indicated sum of the terms of an arithmetic sequence
	If the first term and the n^{th} term are given, then
	$$S_n = \frac{n}{2}(a_1 + a_n)$$
	If the n^{th} term is not given, then
	$$S_n = \frac{n}{2}[2a_1 + (n-1)d]$$
		Geometric Sequence: a sequence in which each term after the first is obtained by multiplying the preceding term by a fixed nonzero constant
		Common Ratio (r)**:** the fixed constant
		To find any term in a geometric sequence, use
		$$a_n = a_1 r^{n-1}$$
			Finite Geometric Series: the indicated sum of the terms of a geometric sequence
			If the last term a_n is not given, use
			$$S_n = \frac{a_1(1-r^n)}{1-r}, \quad r \neq 1$$
			If the last term a_n is given, use
			$$S_n = \frac{a_1 - a_n r}{1-r}, \quad r \neq 1$$
				Infinite Geometric Series: a series of the form $a + ar + ar^2 + ar^3 + \ldots + ar^{n-1} + \ldots$
				To find the sum of an infinite geometric sequence, use
				$$S = \frac{a}{1-r}, \quad -1 < r < 1$$
					Geometric Extremes: the first and last terms of a geometric sequence
					Geometric Means: the terms between the geometric extremes
					Mean Proportionality: the geometric mean between two terms
					To solve for the mean proportionality of two terms a and b, use
					$$GM = \pm\sqrt{ab}$$

B. Establishing a Purpose for the Lesson	The purpose of this lesson is to enable the students to solve real life problems involving arithmetic series.	The purpose of this lesson is to enable the students to solve real life problems involving geometric sequences.	The purpose of this lesson is to enable the students to solve real life problems involving finite geometric series.	The purpose of this lesson is to enable the students to solve real life problems involving infinite geometric series.	The purpose of this lesson is to enable the students to solve real life problems involving geometric means.

C. Discussing New Concepts and Practicing New Skills #1	**Practice Exercises** A. Find the sum of each arithmetic sequence. 1. 2, 5, 8,... to 8 terms 2. -11, -7, -3,... to 23 terms 3. Sum of odd integers from 1 to 100 4. Sum of the integers between 50 and 200 which are divisible by 5	**Practice Exercises** A. Find the common ratio and the next three terms of each geometric sequence. 1. $2, 6, 18, 54, \ldots$ 2. $\frac{1}{8}, \frac{1}{4}, \frac{1}{2}, \ldots$ 3. $4, 12, 36, \ldots$ 4. $0.02, 0.2, 2, \ldots$ 5. $3x^3, 6x^5, 12x^7, \ldots$ B. Find the specified term of each geometric sequence. 1. $3, 6, 12, \ldots$ a_7 2. $4, 20, 100, \ldots$ a_8 3. $7, -7, 7, \ldots$ a_{17} 4. $3, 1.2, 0.48, \ldots$ a_{10} 5. $1, \frac{3}{2}, \frac{9}{4}, \ldots$ a_{11}	**Practice Exercises** A. Find the indicated sum of the following geometric series. 1. $1 + 4 + 16 + \ldots S_6$ 2. $2 + 4 + 8 + 16 + \ldots S_{10}$ 3. $2 + 6 + 18 + \ldots S_7$ 4. $(-9) + 6 + (-4) + \ldots S_8$ 5. $2 + 2\sqrt{2} + 4 + \ldots S_{10}$	**Practice Exercises** A. Determine if each geometric series has a sum. If the sum exists, find the sum. 1. $4 + 1 \frac{1}{4} + \ldots$ 2. $4 + 2 + 1 + \ldots$ 3. $16 + 8 + 4 + 2 + \ldots$ 4. $1 + \frac{1}{3} + \frac{1}{9} + \frac{1}{27} + \ldots$ 5. $16 + 1.6 + 0.16 + \ldots$	**Practice Exercises** A. Insert the specified number of geometric means. 1. Two: 3 and 81 2. Two: 16 and −2 3. Two: 2 and −250 4. Two: −3 and 24 5. One negative: 2 and 50

D. Discussing New Concepts and Practicing New Skills #2	B. In each arithmetic series, find the specified unknown. 1. $S_n = 90$, a_1=10, a_n=26, n=? 2. S_n = 1,800, a_n=185, n=18, a_1=? 3. S_n = 119, a_1=5, d=4, n=? 4. a_{10} = 27.5, d=3, a_1=?, S_n=?	Solve each problem completely. 1. The first term of a geometric sequence is 8, and the second term is 4. Find the fifth term. 2. The first term of a geometric sequence is 3, and the third term is $\frac{4}{3}$. Find the fifth term. 3. The common ratio in a geometric sequence is $\frac{2}{5}$ and the fourth term is $\frac{5}{2}$. Find the third term. 4. Which term of the geometric sequence 2, 6, 18,... is 118098? 5. The second and fifth terms of a geometric sequence are 10 and 1250, respectively. Is 31,250 a term of this sequence? If so, which term is it?	B. Find each specified term. 1. $S_5 = \frac{31}{4}$; $r = \frac{1}{2}$; $a_1 = ?$ 2. $S_8 = 2,550$; $r = 2$; $a_1 = ?$ 3. $S_7 = 7,651$; $r = 3$; $a_1 = ?$ 4. $S_{10} = 51,150$; $r = 2$; $a_1 = ?$ 5. $S_6 = 126$; $r = -\frac{1}{2}$; $a_6 = ?$	B. In each infinite geometric series, find the specified unknown. 1. $S = ?$ 45; $a_1 = 15$; $r = ?$ 2. $S = 28$; $r = \frac{1}{7}$; $a_1 = ?$ 3. $S = 80$; $r = \frac{1}{5}$; $a_1 = ?$ 4. $S = \frac{1}{3}$; $a_1 = \frac{3}{10}$; $r = ?$ 5. $S = \frac{4\sqrt{3}}{3}$; $r = \frac{1}{4}$; $a_1 =$	B. Find the missing terms of each geometric sequence. 1. 3, _____, 27 2. _____, 24, _____, _____, 3, _____ 3. x, _____, x^2 4. 81, _____, _____, _____, _____, $\frac{1}{3}$ 5. _____, _____, x^4, $2x^7$, _____, _____

E. Developing Mastery	Problem Set	Problem Set	Problem Set	Problem Set	Problem Set
	A. Find the sum of each arithmetic sequence. 1. 3, 5, 7,... to 31 terms 2. 10, -2, -14,... to 17 terms 3. Sum of even integers from 10 to 90 4. Sum of the integers between 2 and 100 which are divisible by 3 B. In each arithmetic series, find the specified unknown. 1. S_n = 50, a_1=4, a_n=16, n=? 2. S_n = 195, a_n=33, d=3, a_1=? 3. S_n = -15, a_1=12, d=-3, n=? 4. Sum of even integers between 20 and 80	A. Find the common ratio and the next three terms of each geometric sequence. 1. $4, 8, 16, 32, \ldots$ 2. $\frac{4}{9}, \frac{4}{3}, 4, \ldots$ 3. $1, -5, 25, \ldots$ 4. $-5, -0.5, -0.05, \ldots$ 5. $x, 5x^2y, 25x^3y^2, \ldots$ B. Find the specified term of each geometric sequence. 1. $64, -32, 16, \ldots$ a_7 2. $2, -10, 50, \ldots$ a_8 3. $2, -6, 18, \ldots$ a_{13} 4. $3, 1.2, 0.48, \ldots$ a_{10} 5. $\frac{1}{16}, \frac{1}{8}, \frac{1}{4}, \ldots$ a_9 C. Solve each problem completely. 1. The first term of a geometric sequence is -2, and the third term is $-\frac{1}{2}$. Find the fifth term. 2. The common ratio in a geometric sequence is $\frac{2}{3}$ and the fourth term is 1. Find the	A. Find the indicated sum of the following geometric series. 1. $9 + 6 + 4 + \ldots S_7$ 2. $2 + 8 + 32 + \ldots S_9$ 3. $3 + 3\sqrt{3} + 9 + \ldots S_9$ 4. $1 + (-2) + 4 + (-8) \ldots S_8$ 5. $(-2) + 6 + (-18) + \ldots S_6$ B. Find the sum of the first n terms of the related geometric series. 1. $a_1 = \frac{1}{2}$; $n =$ $\frac{1}{2}$; $r =$ $\frac{1}{2}$; 7 4; $n =$ 6 4. $a_1 =$ 168; $r =$ 2. $a_1 =$ $\frac{3}{4}$; $n =$ 13; $r =$ 8 4; $n =$ 7 5. $a_1 =$ 4; $r =$ 3. $a_1 = -5$; $n =$ 318; $r =$ 8	A. Determine if each geometric series has a sum. If the sum exists, find the sum. 1. $1 + (-\frac{1}{2}) + \frac{1}{4} + (-\frac{1}{8}) \ldots$ 2. $4 + 2.4 + 1.44 + \ldots$ 3. $6 + 2 + \frac{2}{3} + \frac{2}{9} + \ldots$ 4. $(-5) + (-0.5) + (-0.05) + \ldots$ 5. $1 + (-\frac{1}{3}) + \frac{1}{9} + (-\frac{1}{27}) + \ldots$ B. In each infinite geometric series, find the specified unknown. 1. $S = -10$; $a_1 = -5$; $r = ?$ 2. $S = -52$; $a_1 = -65$; $r = ?$ 3. $S = -\frac{2}{5}$; $a_1 = -\frac{1}{4}$; $r = ?$ 4. $S = -36$; $a_1 = -60$; $r = ?$ 5. $S = 384$; $r = \frac{1}{\ }$; $a_1 = ?$	A. Insert the specified number of geometric means. 1. Two: 128 and 16 2. Three: −2 and −512 3. Two: 4 and 32 4. Three: 4 and 324 5. One positive: −4 and −36 B. Find the missing terms of each geometric sequence. 1. 2, _____, _____, 54 2. _____, _____, _____, 8, 16 3. x, _____, _____, y 4. _____, _____, 9, _____, 1 5. _____, $\frac{1}{3}$, 1, _____, _____

F. Finding Practical Application of Concepts and Skills in Daily Living	Let the students answer the following questions: 1. In what real life situations or problems can we observe some examples of arithmetic series? 2. How can you apply your knowledge of arithmetic 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 geometric sequences? 2. How can you apply your knowledge of geometric sequences 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 geometric means? 2. How can you apply your knowledge of geometric means in solving these real life problems?
G. Making Generalization and Abstractions about the Lesson	Let the students answer the following questions: 1. In your own words, what are arithmetic series? 2. How do we solve problems involving arithmetic series?	Let the students answer the following questions: 1. In your own words, what are geometric sequences? 2. How do we solve problems involving geometric sequences?	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 geometric means? 2. How do we solve problems involving geometric means?
H. Evaluating Learning					
I. Additional Activities for Application or Remediation					
VI. REMARKS	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: ____________________
VII. REFLECTION					

A. No. of learners who earned 80% in the evaluation	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. No. of learners who require additional activities for remediation who scored below 80%	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 _____
C. Did the remedial lessons work? No. of learners who have caught up with the lesson	10–Bohr: _____ 10–Avogadro: _____	10–Bohr: _____ 10–Avogadro: _____	10–Bohr: _____ 10–Avogadro: _____	10–Bohr: _____ 10–Avogadro: _____	10–Bohr: _____ 10–Avogadro: _____
D. No. of learners who continue to require remediation	10–Bohr: _____ 10–Avogadro: _____	10–Bohr: _____ 10–Avogadro: _____	10–Bohr: _____ 10–Avogadro: _____	10–Bohr: _____ 10–Avogadro: _____	10–Bohr: _____ 10–Avogadro: _____
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?					

Checked by:

DR. LORETO R. DOMINGO
Head, Mathematics Department