LEARNING AS ONE NATION

Expanded Project

Math 10_9

L E A R N I N G A C T I V I T Y

Name: _____ **Grade/Score:** _____

Year and Section: _____ **Date:** _____

Subject *(Check or choose from below.)* _____

- ☐ Religion/Values Education
- ☐ Natural Sciences
- ☐ Araling Panlipunan
- ☐ Filipino
- ☐ English
- ☐ Math
- ☐ TLE / ICT
- ☐ MAPEH

Type of Activity *(Check or choose from below.)*_____

- ☐ Concept Notes
- ☐ Skills: Exercise / Drill
- ☐ Laboratory Report
- ☐ Illustration
- ☐ Formal Theme
- ☐ Informal Theme
- ☐ Others: _____

Activity Title: Geometric Means

Learning Target: To determine geometric means in a geometric sequence.

References: *(Author, Title, Pages)*

1) F. B. Orines, et al., Next Century Mathematics, pp. 48-49
2) V. J. A. Dublin and M. V. Bernido, CVIF Learning Activities

Geometric means are the terms between any two given terms of a geometric sequence.

Example: Find the two geometric means between 3 and 81.

Solution: Write the geometric sequence as,

$$3,\quad a_2,\quad a_3,\quad 81$$

From the sequence you can identify that $a_1 = 3$ and $a_4 = 81$. We note that we can find the two unknown terms if we have two equations relating them. Since a geometric sequence has a common ratio, one equation is,

$$\frac{a_2}{3} = \frac{81}{a_3} \qquad \text{or} \qquad a_2 a_3 = (3)(81) = 243.$$

We get another equation since

$$\frac{a_3}{a_2} = \frac{a_2}{3} \qquad \text{or} \qquad a_2 a_2 = 3a_3.$$

We solve the two equations in the two unknowns by substitution.

$$a_2 a_3 = a_2\left(\frac{{a_2}^2}{3}\right) = 243$$

or,

$${a_2}^3 = (3)(243) = 729.$$

The cube root gives $a_2 = 9$. We then use this value of a_2 in the other equation to get the value of a_3:

$$a_3 = \frac{243}{a_2} = \frac{243}{9} = 27.$$

Therefore, the geometric means between 3 and 81 are 9 and 27.

Exercises: What is the geometric mean between 8 and 288?