LEARNING AS ONE NATION

Expanded Project

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

Math 10_18

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

Grade and Section: _____ **Date:** _____

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

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

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

- ☐ Concept Notes
- ☐ Skills: Exercise / Drill
- ☐ Performance Task
- ☐ Illustration
- ☐ Formal Theme
- ☐ Informal Theme
- ☐ Others: _____

Activity Title: The Factor Theorem

Learning Target: To apply the factor theorem.

References: *(Author, Title, Pages)*

1) F.B. Orines, et al., Next Century Mathematics, pp. 113-114
2) V.J.A. Dublin, CVIF Learning Activities

The Factor Theorem

A polynomial $p(x)$ has a binomial factor $x - c$, if and only if $p(c) = 0$.

Example: Determine which of the following binomials are factors of

$$p(x) = 6x^2 - 4x - 2.$$

a) $x - 1$ b) $x + 1$ c) $x + \frac{1}{3}$

Solution: To determine the factors, find the remainder by applying the Remainder Theorem.

a) Step 1: Solve for c.

$$x - c = x - 1$$
$$c = 1$$

Step 2: Find the remainder

$$p(1) = 6(1)^2 - 4(1) - 2 = 0$$

Since $p(1) = 0$, $x - 1$ is a factor of $p(x) = 6x^2 - 4x - 2$.

b) Step 1: Solve for c.

$$x - c = x + 1$$
$$c = -1$$

Step 2: Find the remainder

$$p(-1) = 6(-1)^2 - 4(-1) - 2 = 8$$

Since $p(-1) \neq 0$, $x + 1$ is not a factor of $p(x) = 6x^2 - 4x - 2$.

c) Step 1: Solve for c.

$$x - c = x + \frac{1}{3}$$
$$c = -\frac{1}{3}$$

Step 2: Find the remainder

$$p\left(-\frac{1}{3}\right) = 6\left(-\frac{1}{3}\right)^2 - 4\left(-\frac{1}{3}\right) - 2 = 0$$

Since $p\left(-\frac{1}{3}\right) = 0$, $x + \frac{1}{3}$ is a factor of $p(x) = 6x^2 - 4x - 2$.

Exercises: Determine which of the following binomials are factors of

$$p(x) = x^3 - 6x^2 - 11x - 30 \ .$$

a) $x + 2$ b) $x - 2$ c) $x - 3$ d) $x - 4$