ARELLANO UNIVERSITY
Juan Sumulong Campus
Junior High School Department
2600 Legarda St. Sampaloc, Manila

PACUCOA Accredited- Level III

SUMMATIVE QUIZ IN MATHEMATICS 10
School Year 2025 - 2026

Name: _____ Date: _____

Grade & Section: _____ Teacher: _____

I. MULTIPLE CHOICE (1-20)

Directions: Read each question carefully. Choose the letter of the correct answer by typing the letter of your choice in the space provided before the number. Type E if the answer is not among the options.

_____1. It is an expression in the form $a_n x^n + a_{n-1}x^{n-1} + \cdots + a_2x^2 + a_1x + a_0$ consisting of one or more terms containing variables with nonnegative integer exponents.

A. Algebraic Expression
B. Polynomial Expression
C. Logarithmic Expression
D. Trigonometric Expression

_____2. What is the degree of the polynomial $4x^5 - 2x^3 + 7x - 9$?

A. 1^{st}
B. 3^{rd}
C. 5^{th}
D. 9^{th}

_____3. What is the leading coefficient of the polynomial $3x^4 - 5x^2 + 2x + 1$?

A. –5
B. 1
C. 2
D. 3

_____4. When the polynomial $P(x) = x^3 - 4x^2 + 3x - 12$ is divided by $x - 4$, which part of the division algorithm represents the remainder?

A. The Divisor
B. The Quotient
C. The Degree of the Quotient
D. A constant term

_____5. When performing polynomial long division, which step is crucial to ensure accuracy?

A. Write terms in ascending order.
B. Multiply the divisor by a term to eliminate the constant term of the dividend.
C. Multiply the divisor by a term to eliminate the leading term of the current dividend.
D. Only divide the first term of the dividend.

_____6. Which statement is true about synthetic division?

A. It can be used to divide by any polynomial divisor.
B. It only works when the divisor is of the form x−a.
C. It provides both the quotient and remainder, but only for cubic dividends.
D. It is a method used to find the degree of a polynomial.

_____7. If the remainder when dividing a polynomial $P(x)$ by $x + 4$ is 0, which of the following is true?

A. $P(4) = 0$
B. $P(0) = 4$
C. $P(-4) = 0$
D. The degree of $P(x)$ is 4.

_____8. Which of the following best describes the Factor Theorem?

A. If $P(a) = 0$, then $x - a$ is a factor of $P(x)$.
B. If $x - a$ is a factor, then $P(a) = 1$.
C. It finds the remainder of any division.
D. It is used to determine the leading coefficient.

_____9. If $P(x)$ is divisible by $(x + 2)$, which of the following must be true?

A. $P(2) = 0$
B. $P(-2) = 0$
C. $P(0) = -2$
D. The sum of the coefficients is 0

_____10. Which of the following is a factor of $x^3 - 2x^2 - 5x + 6$?

A. $x - 1$
B. $x + 2$
C. $x - 4$
D. $x + 5$

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_____11. A polynomial function has roots/zeros at –3, 1, 2. Which of the following could be the polynomial?

A. $x(x-3)(x+2)$
C. $(x+3)(x)(x+2)$
B. $(x+3)(x-1)(x-2)$
D. $(x-3)(x+1)(x+2)$

_____12. According to the Rational Root Theorem, the possible rational roots of $P(x) = 3x^3 - 4x^2 + 2x - 9$ are of the forms:

A. $\pm\frac{p}{q}$ where p is a factor of 9 and q is a factor of 3.
B. $\pm\frac{p}{q}$ where p is a factor of 3 and q is a factor of 9.
C. $\pm1, \pm3, \pm9$
D. $\pm1, \pm2, \pm3, \pm9$

_____13. What are the possible rational roots of $P(x) = 2x^3 - x^2 - 4x + 2$?

A. $\pm1, \pm2$
C. $\pm1, \pm\frac{1}{2}$
B. $\pm1, \pm2, \pm\frac{1}{2}$
D. $\pm2, \pm\frac{1}{2}$

_____14. Which number is a possible rational root of $6x^4 + 5x^3 - 3x^2 + 2x - 1 = 0$?

A. -3
C. $\frac{2}{5}$
B. $\frac{1}{3}$
D. $\frac{3}{2}$

_____15. A student uses synthetic division to test if $x = 2$ is a root of $P(x) = x^3 - 6x^2 + 11x - 6$. Using synthetic division, the last number in the bottom row is zero. What is the correct conclusion?

A. $x = 2$ is not a root.
C. The polynomial has no real roots.
B. $x = 2$ is a zero, and $x - 2$ is a factor
D. The student must use long division instead.

For item 16-20, consider the synthetic division setup below.

2	1	–2	–5	6
+		2	0	–10
	1	0	–5	–4

_____16. Which expression represents the dividend?

A. $x^4 - 2x^3 - 5x^2 + 6x$
C. $x^3 - 2x^2 - 5x + 6$
B. $x^2 - 5$
D. $-\frac{4}{x-2}$

_____17. What is the divisor used?

A. $x + 2$
C. $x^3 - 2x^2 - 5x + 6$
B. $x - 2$
D. $x^2 - 5$

_____18. What is the remainder?

A. 1
C. -5
B. 2
D. -4

_____19. What is the degree of the quotient?

A. 1
C. 3
B. 2
D. 4

_____20. What is the quotient?

A. $x^4 - 2x^3 - 5x^2 + 6x$
C. $x^3 - 2x^2 - 5x + 6$
B. $x^2 - 5$
D. $-\frac{4}{x-2}$

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II. FILL IN THE BLANKS (20 points)

A. Directions: Fill in the missing parts to complete the solution for each division problem.

Division Algorithm (6 points)

$P(x) = 2x^3 + 3x^2 - 5x - 7$
$D(x) = x + 1$

$$
\begin{array}{r|l}
 & 2x^2 + \square - \square \\
\hline
x + 1 & 2x^3 + 3x^2 - 5x - 7 \\
 & -\ 2x^3 + \square\, x^2 \\
\hline
 & -\ x^2 - \square \\
 & -\ x^2 + x \\
\hline
 & -\ \square\, x - 7 \\
 & -\ -6x - 6 \\
\hline
 & \square
\end{array}
$$

Synthetic Division (6 points)

$P(x) = x^2 - 5x^3 + 7$
$D(x) = x + 2$

–2		1		7
+			–22	
		11		51

B. Directions: Use the Rational Root Theorem to complete the step-by-step process. Fill in all missing values.

Using the Rational Root Theorem, list all possible rational roots of the polynomial $P(x) = x^3 - x^2 - 10x - 8$.

a) The Constant Term a_0: _____

b) The Leading Coefficient a_n: _____

c) Possible Rational Roots:

q \ p	±1	±	±	±8
±1	±1	±	±4	±

d) Actual Roots/ Zeros: _____, _____, _____

Note, arrange the roots in increasing order to avoid being flagged as incorrect.

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