

## 2.4 Long Division/Remainder Theorem

Period \_\_\_\_\_

**Use the remainder theorem to find the remainder.**

1)  $f(n) = n^3 - 5n^2 - 2n + 36$  at  $n = 4$

2)  $f(n) = n^3 - 10n^2 + 18n + 45$  at  $n = 6$

3)  $f(n) = n^2 - 5$  at  $n = -2$

4)  $f(n) = n^2 - 4n - 6$  at  $n = 5$

**Use the Factor Theorem to determine whether the second polynomial is a factor of the first polynomial.**

5)  $(k^4 - 12k^3 + 26k^2 + 7k + 10) \div (k - 9)$

6)  $(n^2 + 6n + 9) \div (n + 3)$

7)  $(3v^2 - 23v - 70) \div (v - 10)$

8)  $(x^3 - 8x + 37) \div (x + 4)$

**Divide using LONG DIVISION.**

9)  $(9x^2 - 82x + 77) \div (x - 8)$

10)  $(8x^4 + 9x^3 - 4x^2 + 25x + 7) \div (x + 2)$

11)  $(62n - 43n^2 + 15 + 9n^3) \div (9n + 2)$

12)  $(2x^3 - 3x^2 + 2) \div (2x - 3)$

13)  $(6n^2 - 10 + 6n^3) \div (n + 1)$

14)  $(24a^2 + 8a^4 + 26a - 34a^3 - 28) \div (-3 + a)$

15)  $(x^4 + 16x^3 + 64x^2 + 31x - 86) \div (x + 10)$

16)  $(-8v^2 + 2v^3 - 49v + 39) \div (-7 + v)$

17) The volume of a box is represented by  $x^3 + 6x^2 + 11x + 6$  cubic units. The length of the box is  $x + 1$  units long. Find the width and the height.

18) The volume of a box is represented by  $2x^3 + x^2 - 8x - 4$  cubic units. The width is  $x - 2$  units. Find the length and width.

**Answer the following.**

19) A) True or False: An experiment must have at least 2 groups.

B) True or False: Observational studies impose a treatment.

C) True or False: Stratified sampling samples someone from each group.

20) In parallelogram ABCD, the length of AD is 20 units, the length of DE is 12 units, and the length of EC is 6 units. AE is perpendicular to AC. Find the area, in square units, of ABCD.

- A) 288      B) 144  
C) 96        D) 240