

**Pre-Calculus
Review -- Ch 15.5**

Name _____
Period _____ Date _____

1. The polynomial $a + b$ is called a _____ because it has two terms.
2. Consecutive powers of $a + b$ [e.g., $(a + b)^1, (a + b)^2, (a + b)^3$, etc.] are referred to collectively as the _____ Expansion.

3. The _____ Theorem tells us that for any positive integer n
 $(a + b)^n = {}_n C_0 a^n b^0 + {}_n C_1 a^{n-1} b^1 + {}_n C_2 a^{n-2} b^2 + \dots + {}_n C_n a^0 b^n$

4. ${}_n C_r =$ _____ in factorial notation.

5. For any positive integer n , ${}_n C_0 =$ _____ ; ${}_n C_1 =$ _____ ; ${}_n C_n =$ _____

6. $a^0 =$ _____ ; $b^1 =$ _____ ; $a^m a^n =$ _____ ; $\frac{a^m}{a^n} =$ _____ ; $(a^m)^n =$ _____ ; $(-1)^n =$ _____

7. Complete Pascal's Triangle through $n = 10$:

n	Coefficients of $(a + b)^n$
1	1 1
2	
3	
4	
5	
6	
7	
8	
9	
10	

8. For the expansion of $(a + b)^n$ where $n \geq 5$, provide the following:

- a. The coefficient of the 5th term is _____
- b. The exponent of a in the 5th term is _____
- c. The exponent of b in the 5th term is _____
- d. For any term, the sum of the exponents of a and b is always _____
- e. The entire 5th term is _____

9. Expand each of the following:

a. $(x^2 - y^2)^3 =$

b. $(2x^2 - 1)^4 =$

c. $(x^2 + 2)^3 =$

10. In the expansion of $(a + b)^{15}$, find

a. The 9th term _____

b. The 10th term _____

11. In the expansion of $(a - b)^{15}$, find:

a. The 9th term _____

b. The 10th term _____

12. Find the 8th term of $(p + q)^{50}$ _____

13. Find the coefficient of x^2 in the expansion of $\left(x - \frac{1}{x}\right)^{10}$ _____

14. Find the coefficient of x^{10} in the expansion of $(x^2 - 1)^9$ _____