

5-7 Practice

Form K

Expand each binomial.

1. $(x + 4)^3$

To start, identify the third row of Pascal's Triangle.

1 3 3 1

2. $(5 + a)^6$

3. $(y + 1)^4$

4. $(3a + 2)^4$

5. $(x - 3)^5$

6. $(b + 1)^8$

7. $(x + 2)^3$

Find the specified term of each binomial expansion.

8. second term of $(x - 4)^8$

9. third term of $(x + 3)^{12}$

10. fourth term of $(x - 2)^7$

11. third term of $(x^2 - 2y)^6$

12. fifth term of $(3x - 1)^5$

13. seventh term of $(x - 4y)^6$

14. third term of $(x^2 + y^2)^8$

15. second term of $(2 + x)^4$

16. The term $56a^5b^3$ appears in the expansion of $(a + b)^n$. What is n ?

17. The coefficient of the second term in the expansion of $(c + d)^n$ is 6. Find the value of n , and write the complete term.

State the number of terms in each expansion and give the first two terms.

18. $(2a + b)^7$

19. $(c - d)^8$

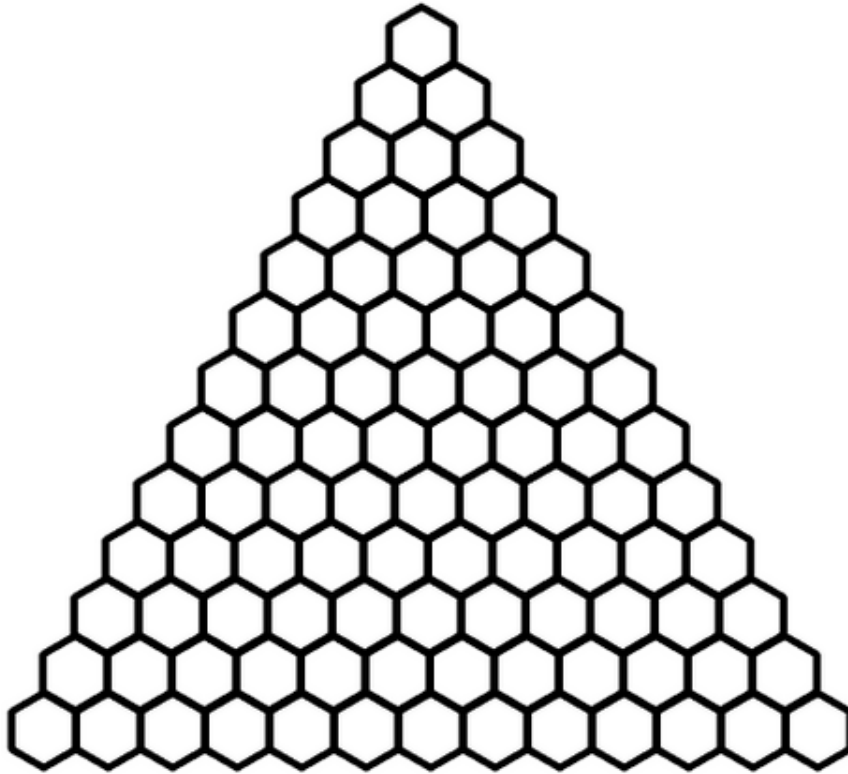
20. $(x + y)^3$

21. $(3x - y)^5$

22. $(x + y^2)^5$

23. $(4 - 2x)^7$

Pascal's Triangle



Binomial Theorem



Theorem Binomial Theorem

For every positive integer n ,

$$(a + b)^n = P_0 a^n + P_1 a^{n-1} b + P_2 a^{n-2} b^2 + \dots + P_{n-1} a b^{n-1} + P_n b^n$$

where P_0, P_1, \dots, P_n are the numbers in the n th row of Pascal's Triangle.

What is the expansion of $(a + b)^6$? Use Pascal's Triangle.

The exponents for a begin with 6 and decrease to 0.

$$1a^6b^0 + 6a^5b^1 + 15a^4b^2 + 20a^3b^3 + 15a^2b^4 + 6a^1b^5 + 1a^0b^6$$

The exponents for b begin with 0 and increase to 6.

$$(a + b)^6 = a^6 + 6a^5b + 15a^4b^2 + 20a^3b^3 + 15a^2b^4 + 6ab^5 + b^6.$$