

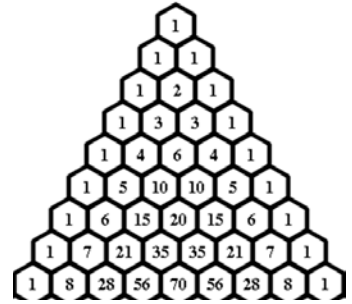


Name _____ Date _____ Period _____

BINOMIAL EXPANSION WORKSHEET

Binomial Coefficient: ${}_n C_r = \binom{n}{r} = \frac{n!}{r!(n-r)!}$

Pascal's Triangle:



Example 1: Find the 4th term in the expansion of $(2x - 3)^5$.
 The 4th term in the 6th line (row 5) of Pascal's triangle is 10. So, the 4th term is $10(2x)^2(-3)^3 = -1080x^2$

Example 2: Expand the binomial. Using row 3, we have 1 3 3 1.

$$(2x - 3)^3 = (2x)^3 + 3(2x)^2(-3) + 3(2x)^1(-3)^2 + (-3)^3$$

$$= 8x^3 - 36x^2 + 54x - 27$$

Find each term described.

- | | |
|--|---|
| 1) 5 th term in expansion of $(x - 2)^7$ | 2) 6 th term in expansion of $(2y - 1)^8$ |
| 3) 2 nd term in expansion of $(1 + 3y)^5$ | 4) 1 st term in expansion of $(4n - 3m)^5$ |
| 5) 5 th term in expansion of $(x + 3)^9$ | 6) 3 rd term in expansion of $(2y + 5x)^4$ |

Expand completely.

- | | |
|-----------------|-----------------|
| 7) $(4x - 1)^4$ | 8) $(m + 2)^5$ |
| 9) $(2n + m)^5$ | 10) $(a - b)^6$ |

11) $(2x + 3y)^4$

12) $(5y - 3z)^3$

13) What is the coefficient of x^7 in $(x+1)^{39}$?

14) Write the 9th and 10th lines of Pascal's triangle below.

15) Express $(1.1)^4$ as a binomial of the form $(a+b)^n$, and evaluate it.

16) Find the exact value of $(1-0.1)^3$ without the use of a calculator. Confirm your answer with a calculator.