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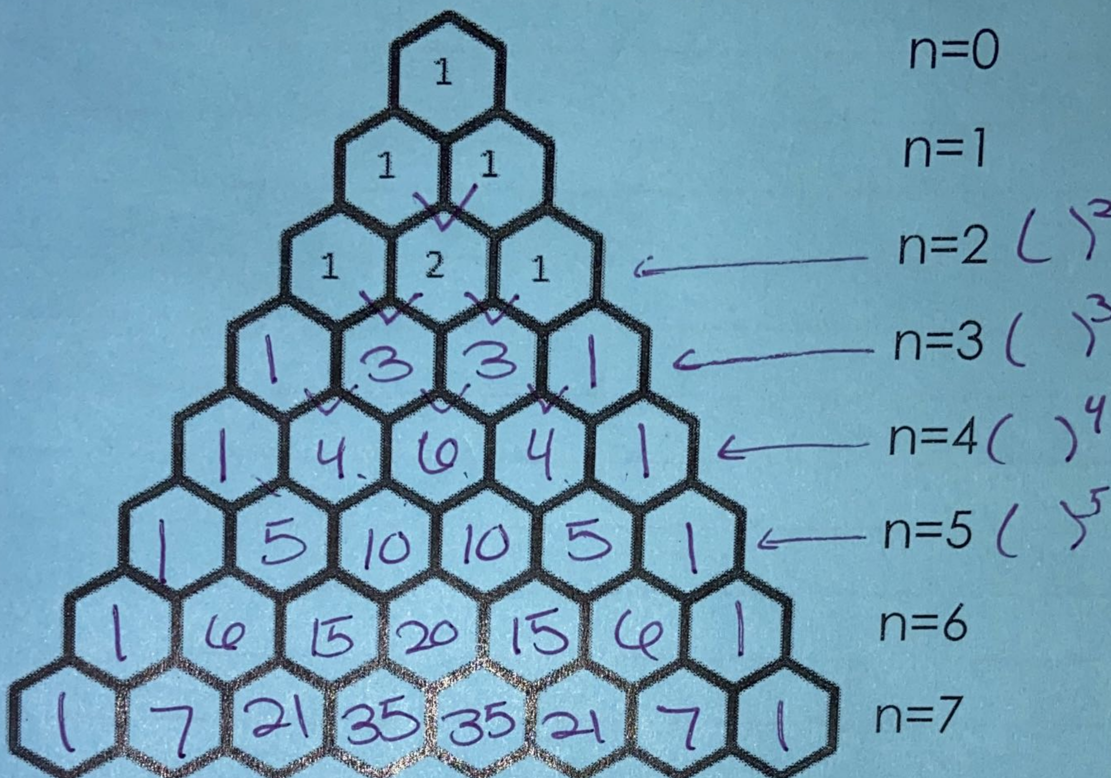
Binomial Expansion

Pascal's Triangle



$(x + y)^0 = 1$

$(x + y)^1 = 1x + 1y$

$(x + y)^2 = 1x^2 + 2xy + y^2$

$(x + y)^3 = 1x^3 + 3x^2y + 3xy^2 + 1y^3$

$(x + y)^4 =$ ______________________

$(2x-5)^{4 \leftarrow n}$

1
1 1
1 2 1
1 3 3 1
→ 1 4 6 4 1

1. Write down the row from Pascal's triangle that matches exponent.
2. 1st term to exponents in descending order ($n \to 0$)
3. raise last term to exponents in ascending order ($0 \to n$)
4. evaluate exponents + multiply down columns

$(2x-5)^4$

*any base w/ exp. of 0 equals 1

1	4	6	4	1
$(2x)^4$	$(2x)^3$	$(2x)^2$	$(2x)^1$	$(2x)^0$
$(-5)^0$	$(-5)^1$	$(-5)^2$	$(-5)^3$	$(-5)^4$

1	4	6	4	1
$16x^4$	$8x^3$	$4x^2$	$2x$	1
1	-5	25	-125	625

multiply down

$$16x^4 - 160x^3 + 600x^2 - 1000x + 625$$

$(\_\_ + \_\_)^n$ everything will be a +

$(\_\_ - \_\_)^n$ signs alternate (start positive, −, +, −, ...)