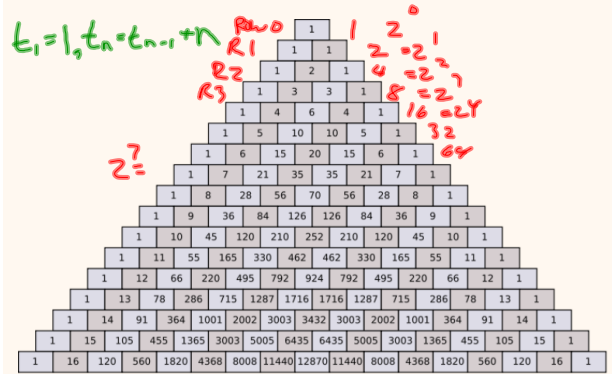


Pascal's Triangle and Expanding Binomial Powers

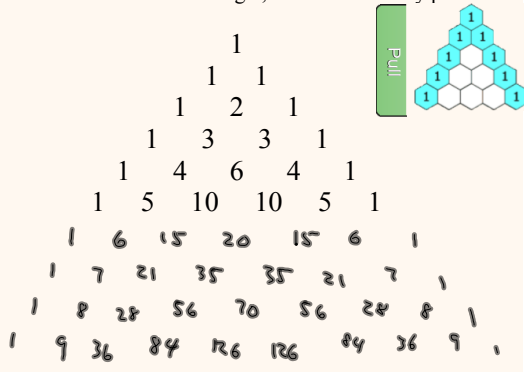
Pascal's Triangle

State as many patterns as possible.



Pascal's Triangle

Complete the next 4 rows in the triangle, and state as many patterns as possible.



Expanding Binomials

a) $(a + b)^0 = 1$ b) $(a + b)^1 = a + b$ c) $(a + b)^2 = a^2 + 2ab + b^2$

d) $(a + b)^3 = a^3 + 3a^2b + 3ab^2 + a^3b^3$ e) $(a + b)^4 = a^4 + 4a^3b + 6a^2b^2 + 4ab^3 + b^4$

What about: $(a + b)^7$? - use pascal's triangle and patterning

$1a^7b^0 + 7a^6b + 21a^5b^2 + 35a^4b^3 + 35a^3b^4 + 21a^2b^5 + 7ab^6 + 1a^0b^7$
 $a^7 + 7a^6b + 21a^5b^2 + 35a^4b^3 + 35a^3b^4 + 21a^2b^5 + 7ab^6 + b^7$

Expand

Expand the following:

$$(2x - y)^4 = (2x + (-y))^4$$

$(a+b)^4 = a^4 + 4a^3b + 6a^2b^2 + 4ab^3 + b^4$

$$= (2x)^4 + 4(2x)^3(-y) + 6(2x)^2(-y)^2 + 4(2x)(-y)^3 + (-y)^4$$

$$= 16x^4 + 4(8x^3)(-y) + 6(4x^2)(y^2) + 4(2x)(-y^3) + y^4$$

$$= 16x^4 - 32x^3y + 24x^2y^2 - 8xy^3 + y^4$$

Pascal's Triangle

Homework:

pg 378 #1, 5, 6, 7,