

Can We Expand $(x + 1)^6$?

Let's start by expanding $(x + 1)^2$

$$x^2 + 2x + 1$$

Now extend this to expand $(x + 1)^3$

$$x^3 + 3x^2 + 3x + 1$$

Finally, try expanding $(x + 1)^4$

$$x^4 + 4x^3 + 6x^2 + 4x + 1$$

Now look at the **coefficients** of each of the terms:

$(x + 1)^1$		1	$x +$	1										
$(x + 1)^2$		1	$x^2 +$	2	$x +$	1								
$(x + 1)^3$		1	$x^3 +$	3	$x^2 +$	3	$x +$	1						
$(x + 1)^4$		1	$x^4 +$	4	$x^3 +$	6	$x^2 +$	4	$x +$	1				
$(x + 1)^5$		1	$x^5 +$	5	$x^4 +$	10	$x^3 +$	10	$x^2 +$	5	$x +$	1		
$(x + 1)^6$		1	$x^6 +$	6	$x^5 +$	15	$x^4 +$	20	$x^3 +$	15	$x^2 +$	6	$x +$	1

Can you spot and continue the pattern? Do you know what the pattern is called?

Pascal's Triangle!