

Project example:

Part (a)

$$C_5^3 = \frac{3}{5} = 5 * 4 * 3(3!) = \frac{5!}{3!(5-2)!}$$

$$= \frac{5!}{3!(5-3)!} = \frac{5*4*3*2*1}{3*2*1, 2*1} = 10 \quad 3*2*1 \text{ cancels } \frac{k}{n} = \frac{n!}{k!(n-k)!}$$

$$(a+b)^1 = a+b$$

$$(a+b)^2 = a^2 + 2ab + b^2$$

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

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

$$C_n^k = c_n - 1^k - 1 + c_{n-1}^k$$

Pascal Triangle (Part c)

$n = 0$							1
$n = 1$						1	1
$n = 2$					1	2	1
$n = 3$				1	3	3	1
$n = 4$			1	4	6	4	1
$n = 5$		1	5	10	10	5	1
$n = 6$	1	6	15	20	15	6	1
	0	1	2	3	4	5	6