Binomial Expansion – Part 1.

Revision:

1. ***Expand and simplify*** the following. Then complete the table

Expansion and simplification	Number of terms	Values of the coefficients
a) $(x + y)^2$		1, 2, 1
b) $(x + y)^3$		

2. The following is Pascal's triangle. Fill in the missing values. What do you notice when you compare rows 2 and 3 to your answers above?

1
1 2 1
1 3 3 1
1 4 __ 4 __
__ __ __ __ __ __

3. Rather than expanding by multpliying out the brackets, use the pattern to complete the expansion of $(x + y)^4$. Notice that x, the first term, will first "take" all the power x^4, and will descend, until y will "take" all the power, y^4.

4. Using the patterns observed, **state** how many terms will be in the expansion of each of the following:

   a) $(x + 2)^4$

   b) $(3 - 2x)^8$

5. Working out the value of coefficients using Pascal's triangle can be onerous for higher values. Write the formula used to calculate the coefficient (from formula booklet!):

6. Using the formula in Q5, calculate each of the following (do NOT use a calculator)

   a) $\binom{9}{3} = {}^{9}C_{3}$

   b) $\binom{8}{6} = {}^{8}C_{6}$

7. By using the patterns observed, and applying the coefficients, fully expand each of the following. Circle the **constant term.**

   a) $(x+3)^5$

   b) $(2x-1)^4$