

## Binomial Expansion

You need to know the terms in the expansion of  $(a+b)^n$

The general term is  $\binom{n}{r} a^{n-r} b^r$

There are alternative ways of writing  $\binom{n}{r}$

$$\binom{n}{r} = {}^n C_r = \frac{n!}{r!(n-r)!}$$

You can use the appropriate button on your calculator, and the arithmetic in questions needs great care if you are not going to throw marks away.

There are then problems based on expansion you are asked to do in the first part of the question.

Typically you may be asked to find the coefficient of a particular power when the binomial is multiplied by a simple factor like  $(a+bx)$

$$\text{So } (a+bx)(p+qx)^n$$

For example to find the coefficient of  $x^3$  you need to find  $a \times$  (coefficient of  $x^3$  in expansion)  
PLUS  $b \times$  ( " "  $x^2$  " " )

The following examples illustrate this and other types of question.