Tips for finding coefficients of required term

- Coefficient of x^r in the expansion of $(1+x)^n$ is ^nC_r

  eg: coefficient of x^6 in the expansion of $(1+x)^{10}$ is $^{10}C_6$

- Coefficient of x^r in the expansion of $(1+\alpha x)^n$ is $^nC_r \alpha^r$ as term containing x^r is $^nC_r \alpha^r x^r$

  eg: coefficient of x^5 in the expansion of $(1+2x)^{12}$ is $^{12}C_5 2^5$

- Coefficient of x^r in the expansion of $(a+bx)^n$ is $^nC_r b^r a^{n-r}$ as term containing x^r is $^nC_r a^{n-r} (bx)^r$

  eg: coefficient of x^4 in the expansion $(3+2x)^9$ is $^9C_4 2^4 3^5$

- Coefficient of x^r in the expansion of $(1+x^p)^n$ is $^nC_{r/p}$ if r is multiple of p.

  eg: coefficient of x^{10} in the expansion of $(1+x^2)^{15}$ is $^{15}C_5$.