1. Determine the coefficient of (a^2 b^4 d) in the polynomial expansion $(3a+5b-2c+d)^7$.
2. a) How many distinct terms exist in the expansion of $(x+y+z+t)^{10}$?

   b)How many terms are in the expansion of $(3a+5b-2c+d)^7$?
3. Find the coefficient of $a^3b^2c^4d$ in the expansion of $(a-b-c+d)^{10}$.
4. What is the coefficient of the *a3b2* in the expansion of (a+2b+3c)5
5. a) Find the third term in the expansion of (3 + y)6

   b) Find the co-efficient of z4 in the expansion of (5 + z)8.

   c) The term containing x3 in the expansion of (x-2y)7 is?
6. In the expansion of $(a + 2a^3)^n$ is the coefficient of the 3rd expansion member greater by 44 than the 2nd member's coefficient. Find out a positive integer meeting these conditions.
7. For which x the 5th expansion member equals M5 = 105?

$$\left(\frac{1}{2\sqrt{x}}-\frac{1}{2}\right)^{10}$$

8. If the coefficient of x^7 and x^8 in the expansion of $(2+x/3)^n$ are equal, then find the value of n.

9. If the co-efficient of x^7 in $(ax^2 + \frac{1}{bx})^{11}$ is equal to the co-efficient of x^{-7} in $(ax - \frac{1}{bx^2})^{11}$, then find relation between a and b?.

10. Find the co-efficient of x^5 in $(1+x^2)^5 (1+x)^4$.

11. a) Find the term independent of x in the expansion of the following question: $\left(\frac{3}{2}x^2 - \frac{1}{3x}\right)^6$

b) Find the term independent of x in the expansion of $\left(\sqrt{\frac{x}{3}} + \frac{\sqrt{3}}{2x^2}\right)^{10}$

12. Find the co-efficient of the x^7 term in the expansion of $(1 - 2x + x^3)^6$.

13. The output of a machine is graded excellent 60% of the time, good 25% of the time, and defective 15% of the time. What is the probability that a sample of size 15 has 10 excellent, 3 good and 2 defective items?

14. The co-efficient of the 3rd term of the expansion $(5x+2)^n$ is 70312500. Find the value of n?

15. Out of a Group of ten residents in a certain country, 3 are Republicans, 5 are Democrats, and 2 are Independents. How many unique ~~partio~~ partitions of this group of residents are there by political party?