



MATHEMATICS

CH: 8 – BINOMIAL THEOREM – WORK SHEET

Name: _____

Date: 22/08/24

Class: XI Sec: A

1. Expand $(2x - 3y)^5$ using Binomial Theorem.
2. Using B.T., expand $(x + y)^5 + (x - y)^5$. Hence evaluate $(\sqrt{2} + 1)^5 + (\sqrt{2} - 1)^5$.
3. Using B.T, evaluate 102^4 .
4. Evaluate the following using B.T. : $(3 + \sqrt{2})^5 - (3 - \sqrt{2})^5$.
5. Using B.T., prove that $2^{3n} - 7n - 1$ is divisible by 49.
6. Using B.T., determine which number is larger 1.2^{4000} or 800 ?
7. Find the 9th term in the expansion of $\left(\frac{x}{a} - \frac{3a}{x^2}\right)^{12}$.
8. Find a , if 17th and 18th terms in the expansion of $(2 + a)^{50}$ are equal.
9. Find the middle term(s) in the expansion of $\left(3x - \frac{x^3}{6}\right)^8$.
10. Find the coefficient of x^{10} in the expansion of $\left(2x^2 - \frac{3}{x}\right)^{11}$.
11. The coefficients of x^7 in $\left(ax^2 + \frac{1}{bx}\right)^{11}$
and x^{-7} in $\left(ax - \frac{1}{bx^2}\right)^{11}$ are equal. Prove that $ab = 1$.
12. Find the term independent of x in the expansion of $\left(3x^2 - \frac{1}{2x^3}\right)^{10}$.
13. The 4th term in the expansion of $\left(ax + \frac{1}{x}\right)^n$ is $\frac{5}{2}$, find the value of a and n .
14. Find the value of a so that the term independent of x in $\left(\sqrt{x} + \frac{a}{x^2}\right)^{10}$ is 405.



15. The coefficients of $(r-5)^{\text{th}}$ and $(2r-1)^{\text{th}}$ terms in the expansion of $(1+x)^{34}$ are equal., find r.

16.The coefficients of three consecutive terms in the expansion of $(1+x)^n$ are in the ratio 1: 7 : 42. [Note : the three coefficients are nC_{r-1} , nC_r and nC_{r+1}].

17.In the binomial expansion of $(1+x)^n$, the coefficients of the fifth, sixth and seventh terms are in AP. Find the value of n.

18.Find a if the coefficients of x^2 and x^3 in the expansion of $(3+ax)^9$ are equal.

19.Find the number of terms in the expansion of $(x+3)^{100} + (x-3)^{100}$ on simplification .

[101, 202, 50, 51, 100]

20.Find the coefficient of x^8y^{10} in the expansion of $(x + y)^{18}$.
