A Level Maths

Topic: Binomial Expansion

Instructions

Answer all questions. Use the Binomial Theorem to expand and evaluate expressions. Show all necessary working.

Practice Problems

Binomial Expansions and Term Finding:

1. Expand $(1+x)^4$
2. Expand $(2+x)^3$
3. Find the coefficient of x^2 in the expansion of $(1+3x)^4$
4. Find the term containing x^3 in the expansion of $(x+2)^5$
5. Expand the first 4 terms of $(1+x)^n$ using binomial coefficients (in terms of n)
6. Using the Binomial Theorem, find the expansion of $(1-2x)^3$
7. Find the constant term in the expansion of $\left(x^2+\frac{1}{x}\right)^6$
8. Expand up to the term in x^3 for $(1+2x)^5$

Multiple-Choice Questions

1. What is the coefficient of x^2 in $(1+2x)^3$?

   A. 6

   B. 12

   C. 16

   D. 24

2. In the expansion of $(1-x)^6$, the coefficient of x^4 is:

   A. 15

   B. -15

   C. 20

   D. -20

3. Which term is the 4th in the expansion of $(x+1)^5$?

   A. $10x^2$

   B. $10x^3$

   C. $10x^4$

   D. $10x$

4. In $(2+x)^5$, what is the coefficient of x^3?

   A. 80

   B. 40

   C. 60

   D. 100

5. Find the constant term in the expansion of $\left(x+\frac{2}{x^2}\right)^5$

   A. 80

   B. 120

   C. 160

   D. 200