

Binomial Expansion

Question Paper 1

Level	International A Level
Subject	Maths
Exam Board	CIE
Topic	Series
Sub Topic	Binomial Expansion
Booklet	Question Paper 1

Time Allowed: 57 minutes

Score: /47

Percentage: /100

Grade Boundaries:

A*	A	B	C	D	E	U
>85%	'77.5%	70%	62.5%	57.5%	45%	<45%

- 1 (i) Find the first three terms, in ascending powers of x , in the expansion of
- (a) $(1 - x)^6$, [2]
- (b) $(1 + 2x)^6$. [2]
- (ii) Hence find the coefficient of x^2 in the expansion of $[(1 - x)(1 + 2x)]^6$. [3]
- 2 (i) Find the coefficients of x^2 and x^3 in the expansion of $(2 - x)^6$. [3]
- (ii) Find the coefficient of x^3 in the expansion of $(3x + 1)(2 - x)^6$. [2]
- 3 (i) Write down the first 4 terms, in ascending powers of x , of the expansion of $(a - x)^5$. [2]
- (ii) The coefficient of x^3 in the expansion of $(1 - ax)(a - x)^5$ is -200 . Find the possible values of the constant a . [4]
- 4 In the expansion of $(2 + ax)^7$, the coefficient of x is equal to the coefficient of x^2 . Find the value of the non-zero constant a . [3]
- 5 (i) Find the first 3 terms, in ascending powers of x , in the expansion of $(1 + x)^5$. [2]
- The coefficient of x^2 in the expansion of $(1 + (px + x^2))^5$ is 95.
- (ii) Use the answer to part (i) to find the value of the positive constant p . [3]
- 6 In the expansion of $(2 + ax)^6$, the coefficient of x^2 is equal to the coefficient of x^3 . Find the value of the non-zero constant a . [4]
- 7 Find the term independent of x in the expansion of $\left(4x^3 + \frac{1}{2x}\right)^8$. [4]

8 Find the coefficient of x^2 in the expansion of $(1 + x^2) \left(\frac{x}{2} - \frac{4}{x} \right)^6$. [5]

9 Find the coefficient of x in the expansion of $\left(x^2 - \frac{2}{x} \right)^5$. [3]

10 (i) Find the first three terms when $(2 + 3x)^6$ is expanded in ascending powers of x . [3]

(ii) In the expansion of $(1 + ax)(2 + 3x)^6$, the coefficient of x^2 is zero. Find the value of a . [2]