

IB Maths: AA HL

Number & Algebra Toolkit

Topic Questions

These practice questions can be used by students and teachers and is Suitable for IB Maths AA HL Topic Questions

Course	IB Maths
Section	1. Number & Algebra
Topic	1.6 Binomial Theorem
Difficulty	Medium

Level: IB Maths

Subject: IB Maths AA HL

Board: IB Maths

Topic: Binomial Theorem

- 1 Find the coefficient of the term in x^3 in the expansion of $(2 - x)^8$.

(3 marks)

- 2 Find the first three terms, in ascending powers of x , in the expansion of $(3 + x)^4$.

(3 marks)

- 3 In the expansion of $(a - x)^4$, the coefficient of the x^2 term is 96.

Given that $a > 0$, find the value of a .

(4 marks)

- 4 Find the first three terms, in ascending powers of x , in the expansion of $(9 - 2x)^5$.

(3 marks)

- 5 In the expansion of $(a - 2x)^5$, the coefficient of the x^2 term is equal to the coefficient of the x^3 term. Find the value of a .

(4 marks)

- 6 In the expansion of $(3 + px)^6$, the coefficient of the x^4 term is four times the coefficient of the x^2 term. Find the possible values of p .

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(3 marks)

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7 (a) Consider the expansion of $(4ax - 3)^5$.

Write down the number of terms in this expansion.

(1 mark)

(b) The coefficient of the term in x^4 is -61440 .

Find the value of a where a is a positive constant.



(4 marks)

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8 (a) Consider the expansion of $\left(x^3 + \frac{4}{x}\right)^4$.

Write the first three terms in descending powers of x .

(3 marks)

(b) Find the value of the constant term.

(3 marks)

9 The coefficient of x^7 in the expansion of $x^3(ax + 3)^5$ is 1215.

Find the possible values of a .

(4 marks)

10 (a) Consider the binomial expansion of $\frac{1}{1+x}$.

Write down the first four terms.

(2 marks)

(b) Find the values of x such that the complete expansion converges.

(2 marks)

(c) Use the terms found in part (a) to estimate $\frac{1}{1.1}$.

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(2 marks)

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11 (a) Consider the binomial expansion of $\sqrt[3]{4(2+x)}$.

Write down the first three terms.

(4 marks)

(b) State the interval of convergence for the complete expansion.

(2 marks)

(c) Use the terms found in part (a) to estimate $\sqrt[3]{12}$. Give your answer as a fraction.

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(2 marks)

12 (a) Consider the binomial expansion of $\frac{1}{\sqrt{4+x}}$.

Write down the first four terms.

(4 marks)

(b) State the interval of convergence for the complete expansion.

(2 marks)

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