MATHSAURUS

**AS Mathematics Exam Questions by Topic**
**Chapter 9: The Binomial Expansion**

These questions are taken from the Specimen Exam materials and the real 2018 papers for the new syllabus AS and A-level mathematics courses and arranged by chapter of the textbooks by Goldie et al (available here: `https://amzn.to/39umfr5` and `https://amzn.to/3hE8kBL` ). There are a mixture of questions from OCR A, OCR B (MEI), Edexcel and AQA. Although the style of questions varies a little across the exam boards the content of the syllabus is almost identical so these are suitable for students preparing for any exam board.

Free problem sets for all other chapters, as well as video solutions, full past papers and other content for GCSE and A-level maths can be found at:

`https://mathsaurus.com/`

OCR B MEI AS Sample Paper 1 Question 2:

**2** Find the coefficient of $x^4$ in the binomial expansion of $(x-3)^5$. **[3]**

AQA 2018 Paper 2 Question 2:

**2** Find the coefficient of $x^2$ in the expansion of $(1+2x)^7$

Circle your answer.

**[1 mark]**

42 4 21 84

AQA AS 2018 Paper 2 Question 10:

**10** In the binomial expansion of $(1+x)^n$, where $n \geq 4$, the coefficient of $x^4$ is $1\frac{1}{2}$ times the sum of the coefficients of $x^2$ and $x^3$

Find the value of $n$.

**[5 marks]**

AQA AS 2018 Paper 1 Question 4:

**4 (a)** Find the first three terms in the expansion of $(1 - 3x)^4$ in ascending powers of $x$.

**[3 marks]**

**4 (b)** Using your expansion, approximate $(0.994)^4$ to six decimal places.

**[2 marks]**

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AQA AS Sample Paper 1 Question 8:

**8 (a)** Find the first **three** terms, in ascending powers of $x$, of the expansion of $(1-2x)^{10}$

**[3 marks]**

**8 (b)** Carly has lost her calculator. She uses the first three terms, in ascending powers of $x$, of the expansion of $(1-2x)^{10}$ to evaluate $0.998^{10}$

Find Carly's value for $0.998^{10}$ and show that it is correct to **five** decimal places.

**[3 marks]**

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Edexcel AS 2018 Paper 1 Question 11:

**11.** (a) Find the first 3 terms, in ascending powers of $x$, of the binomial expansion of

$$\left(2 - \frac{x}{16}\right)^9$$

giving each term in its simplest form.

**(4)**

$$f(x) = (a + bx)\left(2 - \frac{x}{16}\right)^9$$, where $a$ and $b$ are constants

Given that the first two terms, in ascending powers of $x$, in the series expansion of $f(x)$ are 128 and $36x$,

(b) find the value of $a$,

**(2)**

(c) find the value of $b$.

**(2)**

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Edexcel AS Sample Paper 1 Question 7:

**7.** (a) Find the first 3 terms, in ascending powers of $x$, of the binomial expansion of $\left(2-\frac{x}{2}\right)^7$, giving each term in its simplest form.

**(4)**

(b) Explain how you would use your expansion to give an estimate for the value of $1.995^7$

**(1)**

OCR B MEI 2018 Paper 3 Question 6:

**6** Find the constant term in the expansion of $\left(x^2+\frac{1}{x}\right)^{15}$. **[2]**

OCR B MEI AS 2018 Paper 1 Question 2:

**2** Find the binomial expansion of $(3-2x)^3$. **[4]**