

# 4.1 Binomial Expansion

## Question Paper

Course	Edexcel IAL Maths: Pure 2
Section	4. Sequences & Series
Topic	4.1 Binomial Expansion
Difficulty	Hard

**Time allowed:** 50

**Score:** /38

**Percentage:** /100

**Question 1**Fully expand  $(4 - x)^4$ .**[3 marks]****Question 2**Fully expand  $(2 - \frac{1}{3}x)^4$ .**[4 marks]****Question 3**Find the coefficient of the term in  $x^4$  in the expansion of  $(3 + 2x)^9$ .**[3 marks]**

#### Question 4

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

**[3 marks]**

#### Question 4

(b) Use your answer to part (a) to estimate  $(4.5)^4$ .

**[2 marks]**

#### Question 5

In the expansion of  $(4 - px)^6$ , the coefficient of the  $x^4$  term is 19 440.  
Given that  $p$  is a positive integer find the value of  $p$ .

**[3 marks]**

### Question 6

In the expansion of  $(3a - 2x)^6$ , the coefficient of the  $x^3$  term is equal to the coefficient of the  $x^4$  term. Find the value of  $a$ .

**[3 marks]**

### Question 7

(a) Find the first three terms in the expansion of  $(2 - 3x)^7$ .

**[3 marks]**

**Question 7**

(b) Given that  $x$  is small such that  $x^3$  and higher powers of  $x$  can be ignored show that

$$(1 - 2x)(2 - 3x)^7 \approx 128 - 1600x + 8736x^2$$

**[3 marks]****Question 8**

In the expansion of  $(p + qx)^8$ , the coefficients of the  $x^2$  term and the  $x^6$  terms are equal.

Find  $p$  in terms of  $q$ .

**[3 marks]****Question 9**

In the expansion of  $(1 + x)^n$ , the coefficient of the  $x^3$  term is 84.

Find the value of  $n$ .

**[3 marks]**

### Question 10

In the expansion of  $(a + bx)^4$ , the coefficient of the  $x^3$  term is 216.  
In the expansion of  $(a + bx)^6$ , the coefficient of the  $x^4$  term is 4860.  
Find the possible values of  $a$  and  $b$ .

**[5 marks]**