Edexcel Maths C2

Topic Questions from Papers

Binomial Expansion

4.	(a) Write down the first three terms, in ascending powers of x , of the binomial expanding of $(1 + px)^{12}$, where p is a non-zero constant.		
		(2)	
	Given that, in the expansion of $(1 + px)^{12}$, the coefficient of x is $(-q)$ and the coeff of x^2 is $11q$,	icient	
	(b) find the value of p and the value of q .		
		(4)	
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(a) Find the first 3 terms, in ascending powers of x , of the binomial expansion	ansion of
$(1+px)^9,$	
where p is a constant.	(2)
These first 3 terms are 1, $36x$ and qx^2 , where q is a constant.	
(b) Find the value of p and the value of q .	(4)

giving each term in its simplest form.	(4)
	.,



3.		est four terms, in ascending powers of x , in the binomial expansion of there k is a non-zero constant.	f
	$(1+\kappa x)$, with	(3))
	Given that, in this	is expansion, the coefficients of x and x^2 are equal, find	
	(b) the value of <i>i</i>	κ , (2))
	(c) the coefficien	ent of x^3	
	(c) the coefficient	(1))
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(4)	Find the first 4 terms of the expansion each term in its simplest form.	
	(b) Use your expansion to estimate the value of (1.005) ¹⁰ , giving your answer places.	
(3)		

3. (a) Find the first 4 terms, in ascending powers of x, of the binomial expansion $(1 + ax)^{10}$, where a is a non-zero constant. Give each term in its simplest form.	on of (4)
Given that, in this expansion, the coefficient of \mathbf{x}^3 is double the coefficient of \mathbf{x}^2 ,	
(b) find the value of a.	
(b) That the value of a .	(2)

giving each term in its sir	mplest form.	(4)



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2. (a) Find the first 3 terms, in ascending powers of \mathbf{x} , of the binomial exp	pansion of
$\left(2 + \mathbf{k}\mathbf{x}\right)^7$	
where ${\bf k}$ is a constant. Give each term in its simplest form.	(4)
Given that the coefficient of \mathbf{x}^2 is 6 times the coefficient of \mathbf{x} ,	
(b) find the value of \mathbf{k} .	(2)

Leave blank	

$(3-x)^6$		
and simplify each term.	(4)	

• (a) Find the first 4 terms, in ascending powers of x , of the binomial e where a is a constant. Give each term in its simplest form.	expansion of $(1+ax)^7$, (4)
Given that the coefficient of \mathbf{x}^2 in this expansion is 525,	
(b) find the possible values of a .	(2)

- 5. Given that $\binom{40}{4} = \frac{40!}{4!b!}$,
 - (a) write down the value of b.

(1)

In the binomial expansion of $(1+x)^{40}$, the coefficients of x^4 and x^5 are p and q respectively.

(b) Find the value of $\frac{q}{p}$.

(3)



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(a) Find the first 3 terms, in ascending powers of x , of the binomial expansion of	
$(3+bx)^5$	
where b is a non-zero constant. Give each term in its simplest form.	(4)
Given that, in this expansion, the coefficient of x^2 is twice the coefficient of x ,	
(b) find the value of b.	(2)

(a) Find the first 4 terms of the binomial expansion, in ascending powers of x , $\left(1 + \frac{x}{4}\right)^8$	
giving each term in its simplest form.	(4)
(b) Use your expansion to estimate the value of $(1.025)^8$, giving your answer to places.	4 decimal (3)

Leave

$(2-3x)^5$	
giving each term in its simplest form.	
grang each term in he simplest form.	(4)



Find the first 3 terms, in ascending powers of x , in the binomial expansion of	
$(2-5x)^6$	
Give each term in its simplest form	
Give each term in its simplest form.	(4)
	(.)

P 4 1 4 8 7 A 0 3 3 2

(Total 4 marks)

$\left(2-\frac{1}{2}x\right)^8$	
giving each term in its simplest form.	(4)

(a)	Use the binomial theorem to find all the terms of the expansion of	
	$(2+3x)^4$	
	Give each term in its simplest form.	(4)
(b)	Write down the expansion of	
	$(2-3x)^4$	
	in ascending powers of x , giving each term in its simplest form.	(1)

Core Mathematics C2

Candidates sitting C2 may also require those formulae listed under Core Mathematics C1.

Cosine rule

$$a^2 = b^2 + c^2 - 2bc \cos A$$

Binomial series

$$(a+b)^{n} = a^{n} + \binom{n}{1} a^{n-1}b + \binom{n}{2} a^{n-2}b^{2} + \dots + \binom{n}{r} a^{n-r}b^{r} + \dots + b^{n} \quad (n \in \mathbb{N})$$
where $\binom{n}{r} = {}^{n}C_{r} = \frac{n!}{r!(n-r)!}$

$$(1+x)^{n} = 1 + nx + \frac{n(n-1)}{1 \times 2}x^{2} + \dots + \frac{n(n-1)\dots(n-r+1)}{1 \times 2 \times \dots \times r}x^{r} + \dots \quad (|x| < 1, n \in \mathbb{R})$$

Logarithms and exponentials

$$\log_a x = \frac{\log_b x}{\log_b a}$$

Geometric series

$$u_n = ar^{n-1}$$

$$S_n = \frac{a(1-r^n)}{1-r}$$

$$S_{\infty} = \frac{a}{1-r}$$
 for $|r| < 1$

Numerical integration

The trapezium rule:
$$\int_{a}^{b} y \, dx \approx \frac{1}{2} h\{(y_0 + y_n) + 2(y_1 + y_2 + ... + y_{n-1})\}$$
, where $h = \frac{b-a}{n}$

Core Mathematics C1

Mensuration

Surface area of sphere = $4\pi r^2$

Area of curved surface of cone = $\pi r \times \text{slant height}$

Arithmetic series

$$u_n = a + (n-1)d$$

$$S_n = \frac{1}{2}n(a+l) = \frac{1}{2}n[2a+(n-1)d]$$