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2. (a) Find the first 4 terms, in ascending powers of x, of the binomial expansion of  $(1-2x)^5$ . Give each term in its simplest form.

**(4)** 

(b) If x is small, so that  $x^2$  and higher powers can be ignored, show that

$$(1+x)(1-2x)^5 \approx 1-9x$$
.

(2)



(a) Find the first 4 terms of the expansion of  $\left(1+\frac{x}{2}\right)^{10}$  in ascending powers of x, giving each term in its simplest form.

(4)

(b) Use your expansion to estimate the value of  $(1.005)^{10}$ , giving your answer to 5 decimal places.

(3)

giving each term in its simplest form.	740	000000000000000000000000000000000000000
	(4)	
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$\binom{0}{4} = \frac{40!}{4!b!}$

(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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3. (a) Find the first 4 terms of the binomial expansion, in ascending powers of x, of

$$\left(1+\frac{x}{4}\right)^8$$

giving each term in its simplest form.

(4)

(b) Use your expansion to estimate the value of (1.025)<sup>8</sup>, giving your answer to 4 decimal places.

(3)

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3. (a) Find the first 4 terms, in ascending powers of $x$ , of the binomial expansion of $(1 + ax)^{10}$ , where $a$ is a non-zero constant. Give each term in its simplest form.		
	(4)	
Given that, in this expansion, the coefficient of $x^3$ is double the coefficient of $x^2$	,	
(b) find the value of a.		
	(2)	
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	(	$(2+kx)^7$	diameter
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where $k$ is	where $k$ is a constant. Give each term in its simplest form.		
Given that the	coefficient of $x^2$ is 6 tin	nes the coefficient of $x$ ,	
(b) find the va	due of k.		
		,	(2)
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<ul> <li>4. (a) Find the first 4 terms, in ascending powers of x, of the binomia where a is a constant. Give each term in its simplest form.</li> <li>Given that the coefficient of x² in this expansion is 525,</li> </ul>	al expansion of $(1+ax)^7$ , (4)
(b) find the possible values of a.	(2)
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3.	(a) Find the first four terms, in ascending powers of $x$ , in the binomial expansion $(1+kx)^6$ , where $k$ is a non-zero constant.	(3)
	Given that, in this expansion, the coefficients of $x$ and $x^2$ are equal, find	
	(b) the value of $k$ ,	(2)
	(c) the coefficient of $x^3$ .	(1)
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2.	(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
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 $(2-3x)^5$ 

giving each term in its simplest form.

9	

(Total 4 marks)

$(2-5x)^6$	
Give each term in its simplest form.	
Sive such term in its simplest form.	(4)



2.	(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)
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