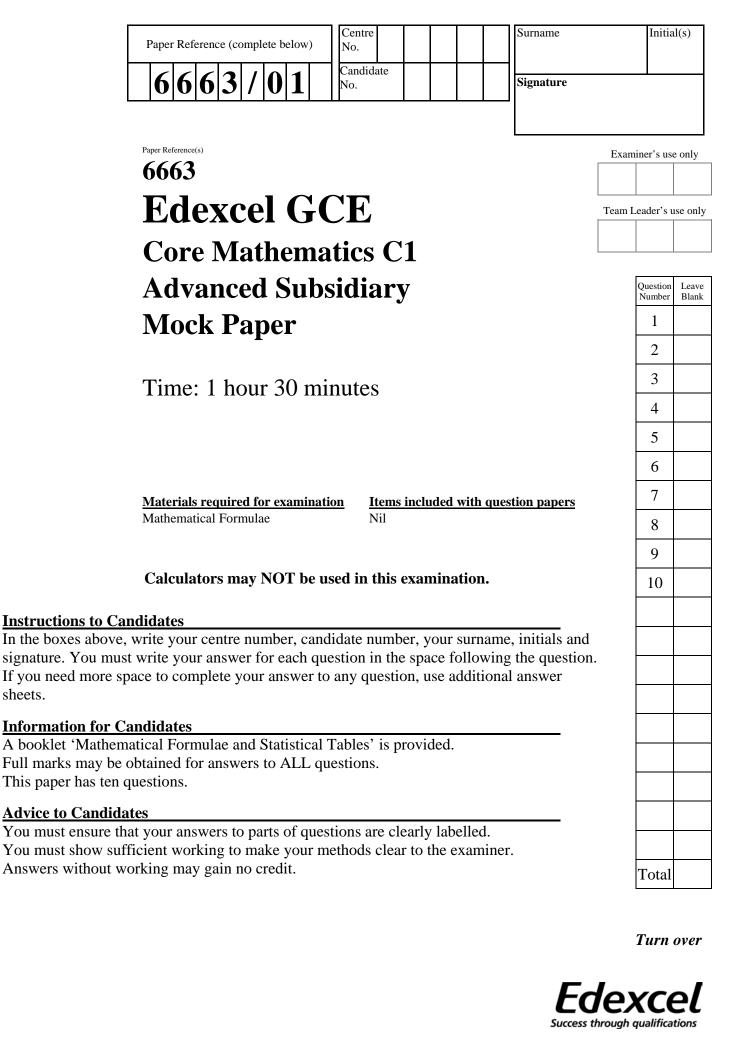
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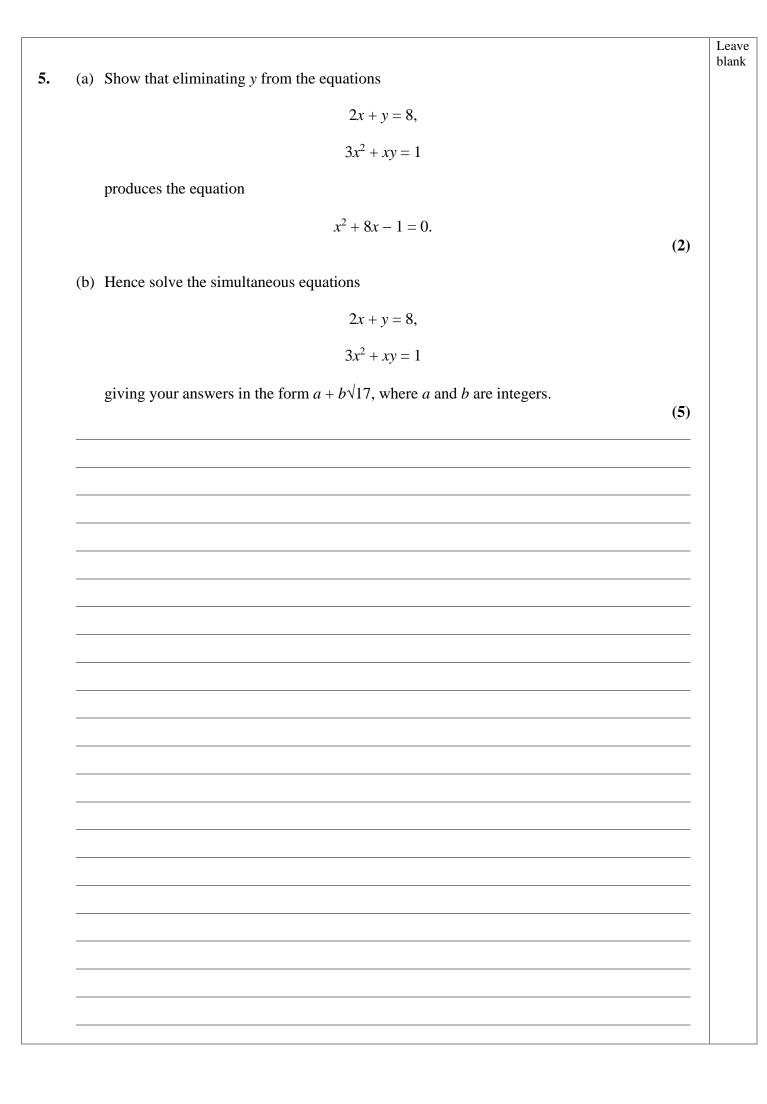


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1.	Solve the inequality	blank
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	$10 + x^2 > x(x - 2)$.	
	(3)	
		1

Leave blank Find $\int \left(x^2 - \frac{1}{x^2} + \sqrt[3]{x}\right) dx$. 2. (4)

3. Find the value of (1) (a) 81 ^{1/2} . (1) (b) 81 ^{1/4} . (2) (c) 81 ^{-3/2} . (1)			l	Leave blank
(b) $81^{\frac{3}{4}}$, (c) $81^{-\frac{3}{4}}$.	3.	Find the value of		UTAIIK
(1) (b) $81^{\frac{3}{4}}$, (c) $81^{-\frac{3}{4}}$.				
(b) $81^{\frac{3}{4}}$, (c) $81^{-\frac{3}{4}}$.		(a) $81^{\frac{1}{2}}$,		
(2) (c) $81^{-\frac{3}{4}}$.			(1)	
(2) (c) $81^{-\frac{3}{4}}$.		(b) $81^{\frac{3}{4}}$.		
(c) 81 ⁻³ . 		()))) ()	(2)	
		$() - 21^{-\frac{3}{4}}$		
		(c) 81^{4} .	(1)	
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4.	A sequence a_1, a_2, a_3, \dots is defined by	Leave blank
	$a_1 = k, a_{n+1} = 4 a_n - 7,$	
	where <i>k</i> is a constant.	
	(a) Write down an expression for a_2 in terms of k . (1)	
	(b) Find a_3 in terms of k, simplifying your answer.	
	(2)	
	Given that $a_3 = 13$,	
	(c) find the value of k . (2)	



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6.		$f(x) = \frac{(2x+1)(x+4)}{\sqrt{x}}, x > 0.$	Leave
	(a)	Show that $f(x)$ can be written in the form $Px^{\frac{3}{2}} + Qx^{\frac{1}{2}} + Rx^{-\frac{1}{2}}$, stating the values of the constants <i>P</i> , <i>Q</i> and <i>R</i> .	
		(3)	
	(b)	Find f'(x). (3)	
	(c)	Show that the tangent to the curve with equation $y = f(x)$ at the point where $x = 1$ is	
		parallel to the line with equation $2y = 11x + 3$. (3)	

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6.	continued	

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7.	(a)	Factorise completely $x^3 - 4x$.	
		(3)	
	(b)	Sketch the curve with equation $y = x^3 - 4x$, showing the coordinates of the points where the curve crosses the <i>x</i> -axis.	
		(3)	
	(c)	On a separate diagram, sketch the curve with equation	
		$y = (x - 1)^3 - 4(x - 1),$	
		showing the coordinates of the points where the curve crosses the x -axis. (3)	

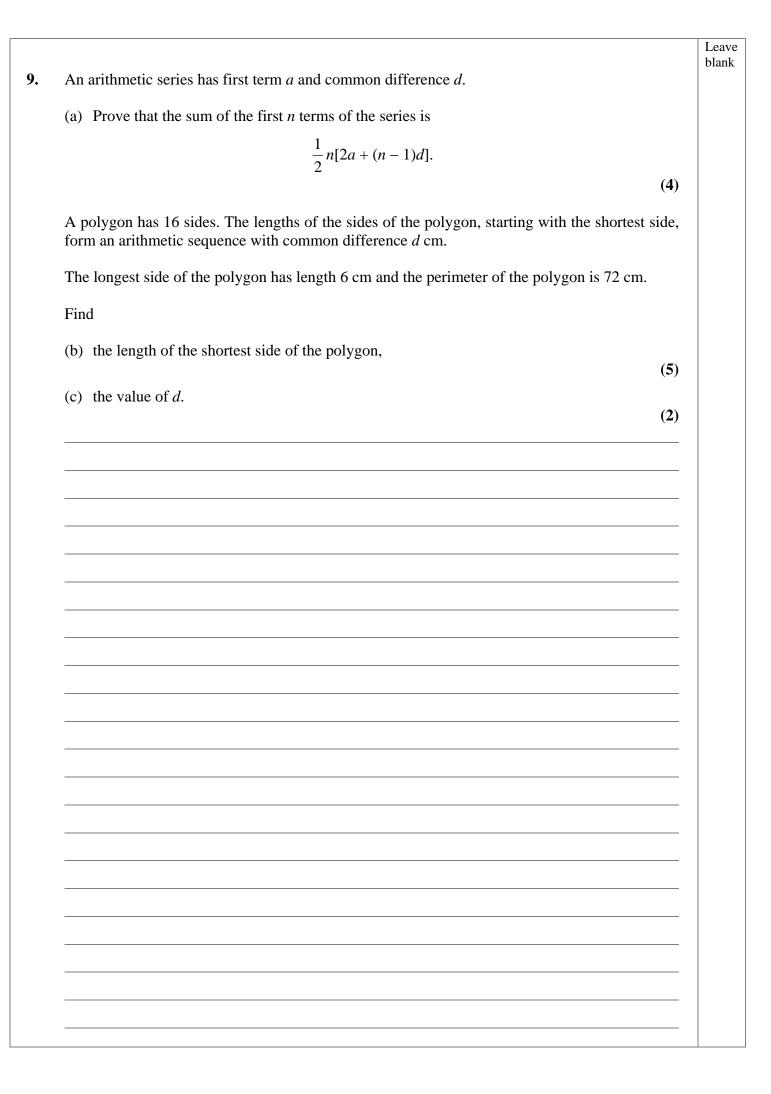
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8.	The straight line l_1 has equation $y = 3x - 6$.		
	The straight line l_2 is perpendicular to l_1 and passes through the point (6, 2).		
	(a) Find an equation for l_2 in the form $y = mx + c$, where <i>m</i> and <i>c</i> are constants.	(3)	
	The lines l_1 and l_2 intersect at the point <i>C</i> .		
	(b) Use algebra to find the coordinates of <i>C</i> .	(2)	
	The lines l_1 and l_2 cross the x-axis at the points A and B respectively.	(3)	
	(c) Calculate the exact area of triangle <i>ABC</i> .	(4)	

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9.	continued	

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10.	For the curve <i>C</i> with equation $y = f(x)$,	
	$\frac{\mathrm{d}y}{\mathrm{d}x} = x^3 + 2x - 7.$	
	(a) Find $\frac{d^2 y}{dx^2}$.	
	(2)	
	(b) Show that $\frac{d^2 y}{dx^2} \ge 2$ for all values of <i>x</i> .	
	(1)	
	Given that the point $P(2, 4)$ lies on C ,	
	(c) find y in terms of x ,	
	(5) (d) find an equation for the normal to <i>C</i> at <i>P</i> in the form $ax + by + c = 0$, where <i>a</i> , <i>b</i> and <i>c</i> are	
	(d) This an equation for the hormat to c at r in the form $ax + by + c = 0$, where a, b and c are integers. (5)	

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