

crashMATHS -

C1 PAPERS
PRACTICE PAPER B



1 A line A has equation $2y-4x=-5$.	
(a) State the gradient of the line A.	(1)
Another line B is perpendicular to the line A and passes through the point $(-2, 4)$.	
(b) Work out the equation of the line B .	(3)
A line C has gradient 4 and passes through the point P .	
Given that P is the point where the line A and the line B intersect,	
(c) Work out the equation of the line C .	(4)



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2 Express $\frac{x}{2\sqrt[4]{y}} \sqrt{\frac{2x^2y}{5\sqrt{y}}}$	
in the form ax^p , where a and p are constants to be found.	(3)
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3 Given the equation $ax^2 + bx + c = 0$, by completing the square, or otherwise,	
(a) Show that	
$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$	(-)
$x = {2a}$	(5)
(b) Hence, or otherwise, find, as surds, the roots of the equation	
$2(x+1)(x-4)-(x-2)^2=0$	(4)

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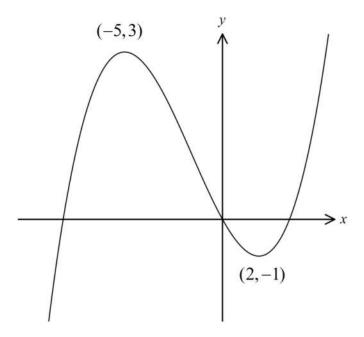
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4 The diagram below shows a sketch of the curve y = f(x).



On separate diagrams, sketch the curve with equation

(i)
$$y = f(x-3)$$

(ii)
$$y = f(x) - k$$

On each sketch you should indicate clearly the coordinates of the maximum and minimum point.

(5)

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5 The equation $x^2 - kx + 5 = k + 2x$, where k is a constant, has two distinct real solutions.	
(a) Show that	
$k^2 + 8k - 16 > 0$	(3
(b) Hence, or otherwise, find the range of possible values of k .	(

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6 Given that $M(-2,3)$, $N(4,5)$, $O(-1,0)$, $P(5,2)$,	
Show that MNOP is a rectangle.	(5)
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7 By sketching, or otherwise, work out the number of solutions to the equ	ation
$x^{-1} = x^3 - 16x$	(5)
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8	The curve $y = f(x)$ is defined such that $y = \frac{(x+3)(x-2)}{x}$	
	(a) Work out the gradient function of the curve.	(5)
	(b) The tangent to the curve at the point P has equation $y + 2x - c = 0$.	
	Work out the coordinates of the point P.	(3)
	(c) Work out the value of c .	(2)
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9	Jessica is an author and plans to write a book. She aims to write 10 pages of her book	
	in the first week she writes, 12 in the second week, 14 in the third, and so on, such	
	that the number of pages she aims to write each week forms an arithmetic	
	progression.	
	(a) Work the number of pages that Jessica will aim to write in the eighth week.	(2)
	(b) Calculate the total number of pages that Jessica will write in the first eight weeks.	(2)
	Jessica decides to have 18 chapters in her book, all of equal length.	
	Given that Jessica will take 12 weeks to write her novel,	
	(c) Work out the number of pages of each chapter in Jessica's novel.	(3)
	In a particular week, Jessica has written $\frac{4}{9}$ of her novel.	
	She then decides to take a 4 week break.	
	(d) Work out the week in which Jessica will start to write again.	(3)
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10 An arithmetic sequence a_i has first three terms	
$a_1 = 2x + 1$	
$a_2 = x - 6$	
$a_3 = x$	
where x is a constant.	
Find $\sum_{i=1}^{5} a_i$.	(6)
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11	A curve	y = f((x) is	s defined	such	that
			,			

$$f'(x) = \frac{3x^3 - 5x^2 + 2x}{x} + 2x + 1$$

Given that the curve passes through the points (2,-10) and (1,-4),

Work out y in terms of x .	(8)
WOIR Out V III terms of A.	(0)

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