1	The point A has coordinates $(5, -4)$ The point B has coordinates $(13, 1)$	
	(a) Work out the coordinates of the midpoint of AB .	
	(,(2)
	Line L has equation $y = 2 - 3x$	(2)
	(b) Write down the gradient of line L.	
	(b) Write down the gradient of line L.	
		(1)
	Line L has equation $y = 2 - 3x$	
	(c) Does the point with coordinates (100, -302) lie on line L?	
	You must give a reason for your answer.	
		(1)
	(Tatal face Occuptions 1 in A	(1)
	(Total for Question 1 is 4	marks)

2	Point A has coordinates $(-3, 11)$ Point B has coordinates $(47, b)$ The midpoint of AB has coordinates $(a, -19)$		
	Find the value of a and the value of b .		
	$a = \dots$		
	<i>b</i> =		
	(Total for Question 2 is 2 marks)		
3	3 Find the gradient of the straight line with equation $5x + 2y = 7$		
	(Total for Question 3 is 2 marks)		
_			

4	The straight line L has equation $2y + 7x = 10$	
7	(a) Find the gradient of L	
	(a) I find the gradient of L	
		(2)
		(2)
	(b) Find the coordinates of the point where L crosses the y-axis.	
		()
		(,
	(Total for Question	n 4 is 3 marks)

5	The straight line L_1 has equation $x + 2y = 4$ The straight line L_2 passes through the points $(-1, -7)$ and $(7, 9)$
	Michael says that the lines L_1 and L_2 are perpendicular.
	Is Michael correct? You must show clearly how you get your answer.
_	(Total for Question 5 is 3 marks)

6	Point A has coordinates (5, 8)	
	Point B has coordinates $(9, -4)$	
	(a) Work out the gradient of AB .	
		(2)
	The straight line L has equation $y = -4x + 5$	
	(b) Write down the gradient of a straight line that is perpendicular to L.	
		(1)
	(Total for Question	6 is 3 marks)
	(2000000)	2 22 2 22202 228)

7	Two circles, C_1 and C_2 , are drawn on a centimetre grid, with a scale of 1 cm for 1 unit on each axis.		
	The centre of circle C_1 is at the point with coordinates $(-1, 3)$ and the radius of C_1 is 13 cm.		
	The centre of circle C_2 is at the point with coordinates (7, 18) and the radius of C_2 is 6 cm.		
	(a) Work out the distance between the centre of \mathcal{C}_1 and the centre of \mathcal{C}_2		
			or
		(3)	C 1
	(b) Explain why circle C_1 intersects circle C_2		
		(1)	
	(Total for Question 7 is 4 ma	ırks)	

8	The straight line L_1 has equation $y = 6 - 2x$ The straight line L_2 is perpendicular to L_1 and passes through the point $(4, 7)$	
	Find the coordinates of the point where the line L_2 crosses the x-axis.	
	(,	
	(Total for Question 8 is 4 marks)	

9	The straight line L_1 has equation $2y = 6x - 5$
	The straight line L_2 is perpendicular to L_1 and passes through the point $(9, -1)$
	Find an equation for L_2
	Give your answer in the form $ay + bx = c$
_	(Total for Question 9 is 4 marks)

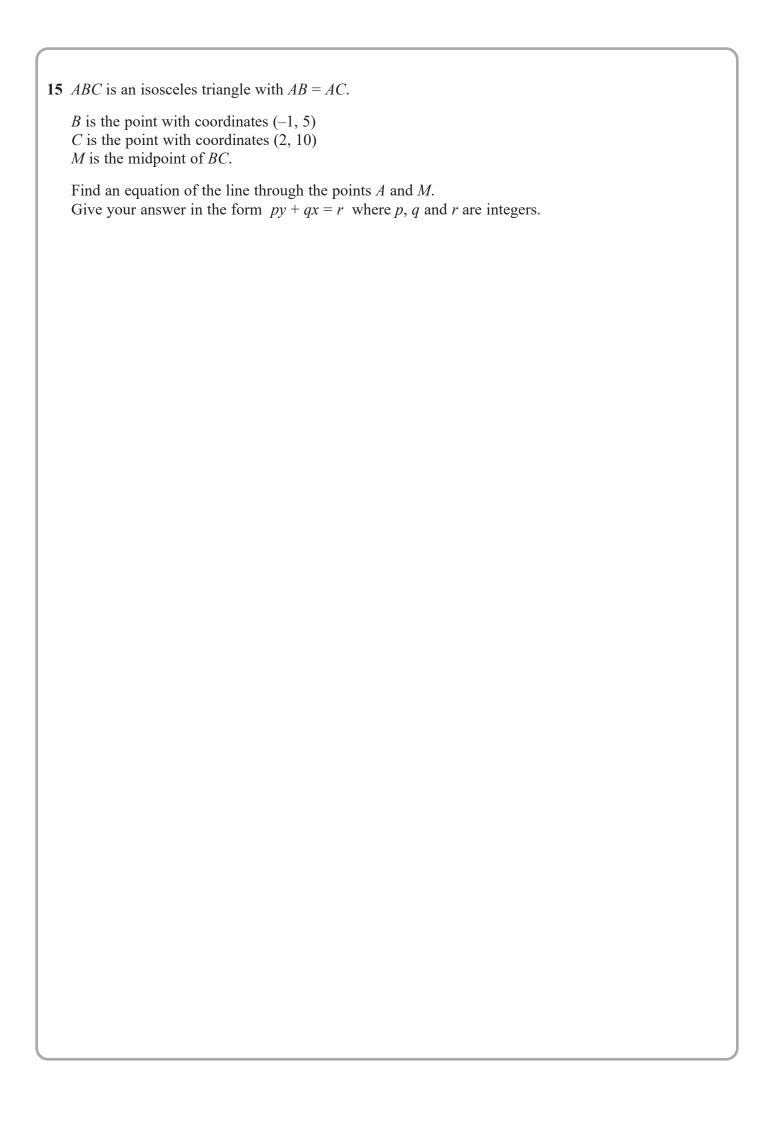
10	
	The straight line L passes through the points $(4, -1)$ and $(6, 4)$
	The straight line M is perpendicular to L and intersects the y -axis at the point $(0, 8)$
	Find the coordinates of the point where \mathbf{M} intersects the x -axis.
	(,
	(Total for Question 10 is 4 marks)

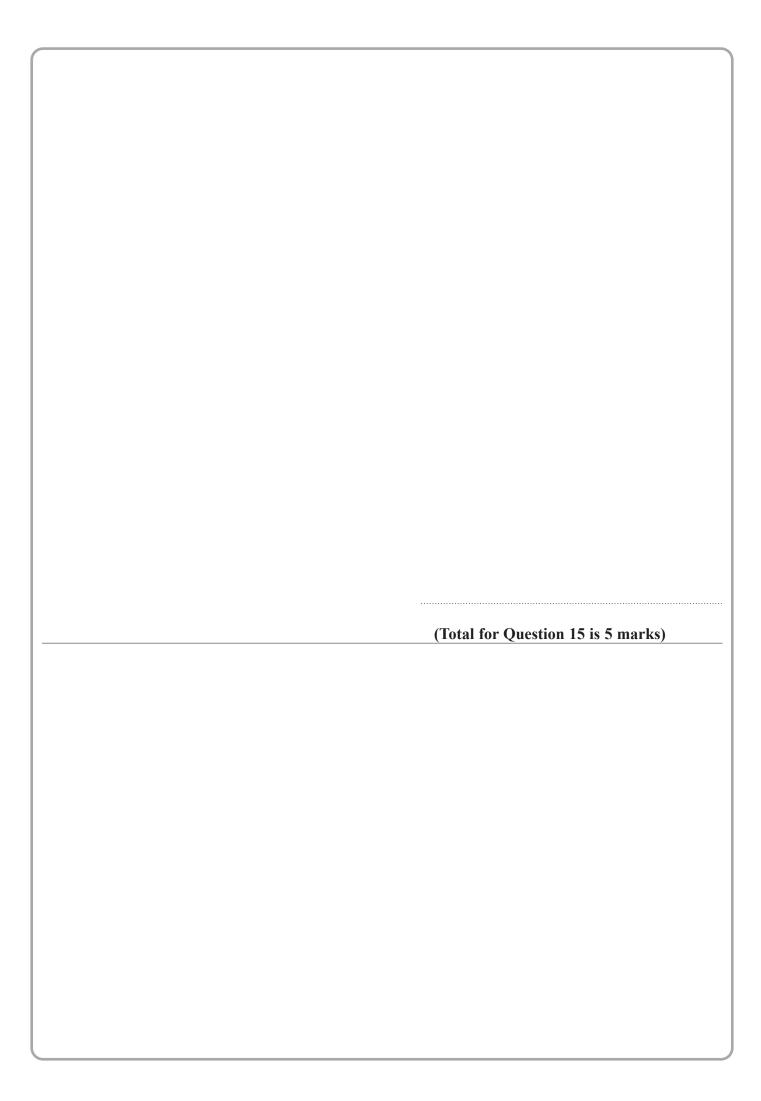
11 (a) Write down an equation of a line that is parallel to the line with equation $y = 7 - 4x$	
The line L passes through the points with coordinates $(-3, 1)$ and $(2, -2)$,
(b) Find an equation of the line that is perpendicular to L and passes through the point with coordinates (-6, 4)	
Give your answer in the form $ax + by + c = 0$ where a, b and c are integers.	
	4)
(Total for Question 11 is 5 mark	<u>s)</u>

12	The centre O of a circle has coordinates $(4, 7)$
14	The point A , on the circle, has coordinates $(4, 7)$. The point A , on the circle, has coordinates $(6, 11)$ and AOP is a diameter of the circle.
	Find an equation of the tangent to the circle at the point P
	(Total for Question 12 is 4 marks)

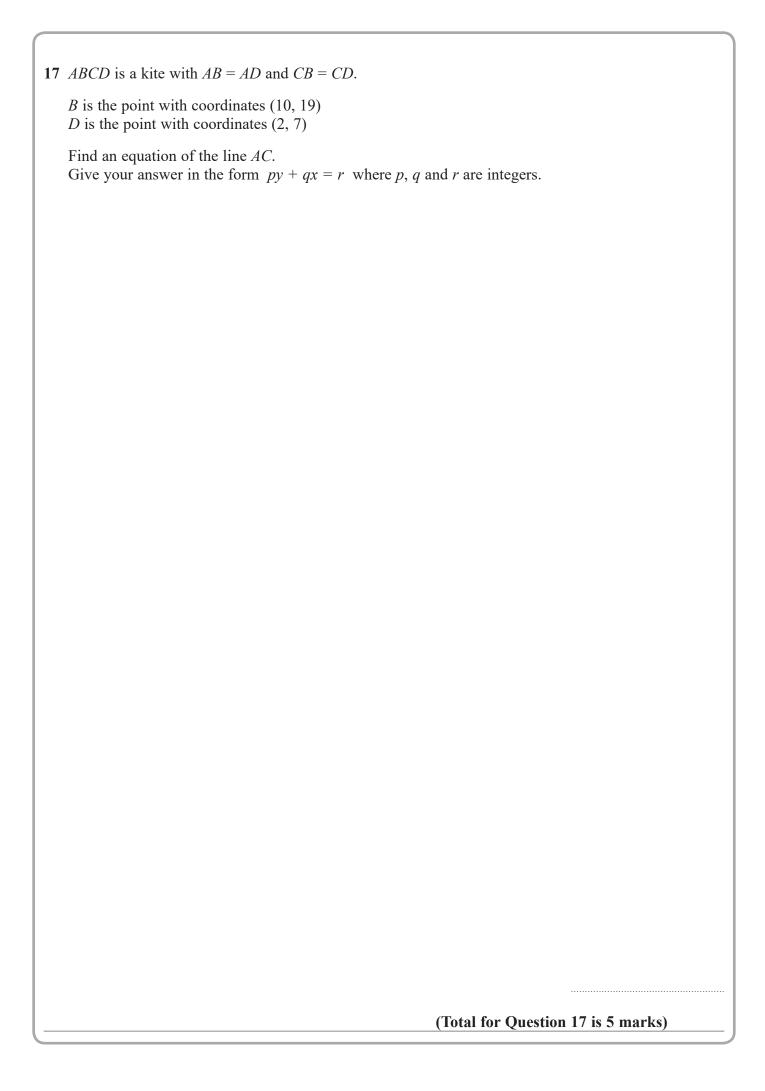
13 Line L has equation $4y - 6x = 33$ Line M goes through the point A (5, 6) and the point B (-4, k)
L is perpendicular to M.
Work out the value of k .
(Total for Question 13 is 4 marks)

14	ABCD is a rhombus.
	The diagonals, AC and BD , intersect at the point M . The coordinates of M are $(6, -11)$
	The points A and C both lie on the line with equation $2y + 7x = 20$
	Find the exact coordinates of the point where the line through B and D intersects the y -axis.
	(, ,
	(Total for Question 14 is 4 marks)
	/





16 ABC is an isosceles triangle such that
AB = AC A has coordinates (4, 37) B and C lie on the line with equation $3y = 2x + 12$
Find an equation of the line of symmetry of triangle ABC . Give your answer in the form $px + qy = r$ where p , q and r are integers. Show clear algebraic working.
(Total for Question 16 is 5 marks)



18 L_1 and L_2 are two straight lines. The origin of the coordinate axes is O. \mathbf{L}_1 has equation 5x + 10y = 8 L_2^1 is perpendicular to L_1 and passes through the point with coordinates (8, 6) L_2 crosses the x-axis at the point A. L, intersects the straight line with equation x = -3 at the point B. Find the area of triangle *AOB*. Show your working clearly. (Total for Question 18 is 5 marks) 19 ABC is a triangle in which angle ABC = 90°

p and q are integers such that

the coordinates of A are (p, 10)the coordinates of B are (-1, -5)the coordinates of C are (8, q)Given that the gradient of AC is $-\frac{6}{7}$ work out the value of p and the value of q

<i>p</i> =
<i>P</i>
$q = \dots$
1
(Total for Ougstion 10 is 5 marks)
 (Total for Question 19 is 5 marks)
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20	P and Q are two points.
	The coordinates of P are $(-1, 6)$
	The coordinates of Q are $(5, -4)$
	Find an equation of the perpendicular bisector of PQ . Give your answer in the form $ax + by + c = 0$ where a , b and c are integers.
	(Total for Question 20 is 6 marks)

Triangle HJK is isosceles with HJ = HK and $JK = \sqrt{80}$

H is the point with coordinates (-4, 1) J is the point with coordinates (j, 15) where j < 0 K is the point with coordinates (6, k)

M is the midpoint of *JK*. The gradient of *HM* is 2

Find the value of j and the value of k.

$j = \dots$
J
$k = \dots$
<i>k</i> =
(Total for Question 21 is 6 marks)

A has coordinates (-4, -2) B has coordinates (1, 10) C has coordinates (19, a) D has coordinates (b, c) (a) Work out the value of a, the value of b and the value of c.
(a) Work out the value of a, the value of b and the value of c.
$a = \dots$
$b = \dots$
$c = \dots$
(4)

(b) Calculate the perimeter, in centimetres, of rectangle	e <i>ABCD</i> .
	cm
	(3) (Total for Question 22 is 7 marks)

23	The straight line L passes through point A ($-$ 6, 2) and point B (5, 3) The straight line M is perpendicular to L and passes through the midpoint of A and B . The line M intersects the line $x = -1$ at point C .
	Calculate the area of triangle ABC.
	(Total for Question 23 is 7 marks)

24 <i>ABCD</i> is a kite, with diagonals <i>AC</i> and <i>BD</i> , drawn on a centimetre square grid, with a scale of 1 cm for 1 unit on each axis.	
A is the point with coordinates $(-3, 4)$	
The diagonals of the kite intersect at the point M with coordinates $(0, 2)$	
Given that $AB = AD = 6.5$ cm and the x coordinate of B is positive,	
find the coordinates of the points B and D .	

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(Total for Question 24 is 7 marks)