Surname	
Other Names	
Candidate's Signature	

GCSE 9 - 1 Questions

Quadratics using Formula

Calculator Allowed

INSTRUCTIONS TO CANDIDATES

- Write your name in the space provided.
- Write your answers in the spaces provided in this question paper.
- Answer ALL questions.
- Any working should be clearly shown in the spaces provided since marks may be awarded for partially correct solutions.
- You should have a ruler, compass and protractor where required.

Total Marks:			

	man walks x km East and then $(x + 8)$ km North. is now 12 km from his starting point.	
(a)	Show that x satisfies the equation $x^2 + 8x - 40 = 0$	
(b)	Solve the equation to find x , giving your answer correct to 3 signifigures.	fica
	Answer $x = \underline{\hspace{1cm}}$	
Give	Answer $x=$ en that the product of $(2x+5)$ and $(x+3)$ is 10, find all the possible values of x .	
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	en that the product of $(2x + 5)$ and $(x + 3)$ is 10, find all the possible values of x .	
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				12	7x - 5 = 0				
				$4x^2 + 7$	(x - 5) = 0				
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			***************************************	*************	***************************************	***********			
a)	Factorise t	the expressi	on $6x^2$ –	-5x - 21	and hend	ce solve t	he equati	on $6x^2 - 5$	x - 21 = 0.
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•••••	••••••••••		•••••	***************************************	***************************************	***************************************	••••••	•••••••	•••••
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•••••				***************************************					
b)	Solve the	equation $5x$	$^{2} + 12x$	+3=0,	giving yo	ur answe	rs correct	to 2 decir	nal places.
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5)	The	The base of an open rectangular box is of length $(2x+6)$ cm and width x cm. The area of this base is $59\mathrm{cm}^2$. The height of the open box is $(x-3)\mathrm{cm}$.						
	(a)	Shov	w that $2x^2 + 6x - 59 = 0$.	2]				
	(b)	(i)	Solve the equation $2x^2 + 6x - 59 = 0$, giving your answers correct to 2 decimplaces. You must show all your working.	nal 3]				
		*********	Hence calculate the volume of the box. State clearly the units of your answer.					
			Volume of the box is	****				

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6)	Solve the quadratic equation $5x^2 - 10x + 3 = 0$, giving your answers correct to 2 deciplaces.	mal [3]

7)	A large rectangular tile has width x cm, length $(x + 5)$ cm and area 2100 cm ² . Use the quadratic formula to calculate the width of the tile, giving your answer corr 1 decimal place.	ect to

		[4]

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8)	Use the quadratic formula to solve $(3x - 1)^2 = x(2x + 3) + 7$. Give your answers correct to 2 decimal places.	[6]

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Find the dimensions of the rectangle. Give your answers to 1 decimal place.

9)	A rectangle of length $(x - 8)$ cm and width x cm and has an area of y cm ² . It is
	known that

$$y - x = 1284$$

You must use an a	lgebraic meth	od.			
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					[8]

10) <i>(a)</i>	Ava runs a distance of 26 miles at an average speed of x mph. Delyth runs the same distance at an average speed which is 2 mph slower than Ava. The difference in their times is exactly 1 hour.	
	Show that x satisfies the equation $x^2 - 2x - 52 = 0$.	[5]

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(b)	Use the quadratic formula to find Ava's speed. Give your solution correct to 2 decimal places.	[4]
	Cive your solution correct to 2 declinal places.	[]

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11) The diagram shows a parallelogram and a rectangle joined along a common side.

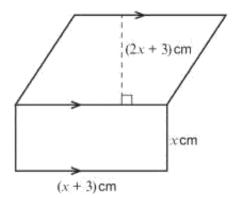


Diagram not drawn to scale

The The	width of the rectangle is x cm. length of the rectangle is $(x + 3)$ cm. height of the parallelogram is $(2x + 3)$ cm. total area of the parallelogram and the rectangle together is 70cm^2 .	
(a)	Show that $3x^2 + 12x - 61 = 0$.	[3]
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(b)		
(b)	Use the quadratic formula to calculate the length of the rectangle. Give your answer correct to 2 decimal places.	[4]
(<i>D</i>)	Use the quadratic formula to calculate the length of the rectangle. Give your answer correct to 2 decimal places.	[4]
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12) <i>(a)</i>	Factorise $x^2 - 5x - 24$ and hence solve $x^2 - 5x - 24 = 0$.	[3]

(b)	Solve the following quadratic equation. Give your answers correct to two decimal places. You must show all your working.	[3]
	$5x^2 + 2x - 9 = 0$	
**********		***************************************

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13)	(x+3y)cm	
	Area = 15 cm ²	(2x-y) cm
(a) Show that $2x^2 + 5xy - $ You must show your v	$-3y^2 - 15 = 0.$ working.	[3]
(b) It is known that • $2x^2 + 5xy - 3y^2$ • $2x^2 - 3y^2 = -24$ • $y - x = 1.1$		
Use an algebraic metl	nod to find the dimensions of t	he rectangle. [8]

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in the	Show that $(x + 2)^2 + 3(x + 1) - 11$ can be simplified to $x^2 + 7x - 4$.	eregi inin

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(b) F 5.	Factorise the expression $5x^2 + 22x - 15$ and hence solve the equation $5x^2 + 22x - 15 = 0$.	
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