Algebra

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9 (a) Solve the following equations. (i) $\frac{5}{w} = \frac{3}{w+1}$ Answer(a)(i) w =[2] (ii) $(y+1)^2 = 4$ Answer(a)(ii) y = or y = [2] (iii) $\frac{x+1}{3} - \frac{x-2}{5} = 2$ Answer(a)(iii) x = [3] **(b) (i)** Factorise $u^2 - 9u - 10$. [2] (ii) Solve the equation $u^2 - 9u - 10 = 0$. Answer(b)(ii) u = or u = [1]



The area of the triangle is equal to the area of the square. All lengths are in centimetres.

(i) Show that $x^2 - 3x - 2 = 0$.

Answer(c)(i)

(ii) Solve the equation $x^2 - 3x - 2 = 0$, giving your answers correct to 2 decimal places. Show all your working.

[3]

Answer(c)(ii) x = _____ or x = _____ [4]

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8 (a) y is 5 less than the square of the sum of p and q.

Write down a formula for y in terms of p and q.

Answer(a) y =[2]

(b) The cost of a magazine is x and the cost of a newspaper is (x-3).

The total cost of 6 magazines and 9 newspapers is \$51.

Write down and solve an equation in x to find the cost of a magazine.

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Answer(b) \$ [4]

(c) Bus tickets cost \$3 for an adult and \$2 for a child.
There are *a* adults and *c* children on a bus.
The total number of people on the bus is 52.
The total cost of the 52 tickets is \$139.
Find the number of adults and the number of children on the bus.

Answer(c) Number of adults =

[5]

Number of children = _____

9 (a) The cost of a bottle of water is w.

The cost of a bottle of juice is \$*j*.

The total cost of 8 bottles of water and 2 bottles of juice is \$12.

The total cost of 12 bottles of water and 18 bottles of juice is \$45.

Find the cost of a bottle of water and the cost of a bottle of juice.

- (b) Roshni cycles 2 kilometres at y km/h and then runs 4 kilometres at (y 4) km/h. The whole journey takes 40 minutes.
 - (i) Write an equation in y and show that it simplifies to $y^2 13y + 12 = 0$.

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Answer(b)(i)

- (ii) Factorise $y^2 13y + 12$.
- Answer(b)(ii) [2] (iii) Solve the equation $y^2 - 13y + 12 = 0$.
 - Answer(b)(iii) y = or y = [1]
- (iv) Work out Roshni's running speed.
- Answer(b)(iv) km/h [1]

- (c) Solve the equation
- $u^2 u 4 = 0.$

Show all your working and give your answers correct to 2 decimal places.

Answer(c) u = or u =[4]

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				Wall						
			Ene	closure	7		2	NOT TO SCALE		
A farme He uses	r makes a 1 a wall for (ectangular	enclosu d a tota	ure for his 1 of 72 m	s animals. etres of fe	encing fo	r the othe	r three si	des.	
The encl	losure has	osure has width x metres and area A square metres.								
(a) Sho	by that $A =$	$72x - 2x^2$.								
Ans	wer (a)									
	torise com	pletely 72	$x - 2x^2$.							
(b) Fac										
(b) Fac										
(b) Fac										
(b) Fac					Answer(Ь)				_
(b) Fac	nplete the	table for A	= 72 <i>x</i> -	$-2x^2$.	Answer(b)				<u> </u>
(b) Fac	nplete the	table for A	= 72 <i>x</i> -	$-2x^2$.	Answer(<i>b)</i>	25	30	35	
(b) Fac	nplete the	table for <i>A</i>	= 72x -	$-2x^2$.	Answer(20	25	30	35	

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The rectangle and the square shown in the diagram above have the same area.

(i) Show that $2x^2 - 15x - 9 = 0$.

Answer(b)(i)

(ii) Solve the equation $2x^2 - 15x - 9 = 0$. Show all your working and give your answers correct to 2 decimal places.

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Answer(b)(ii) x = [4]

(iii) Calculate the perimeter of the square.

Answer(b)(iii) cm [1]

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11

[3]

6) November 2010 V3

3 (a) Expand the brackets and simplify. x(x+3)+4x(x-1)Answer(a) [2] **(b)** Simplify $(3x^3)^3$. [2] Answer(b) (c) Factorise the following completely. (i) $7x^7 + 14x^{14}$ Answer(c)(i) [2] (ii) xy + xw + 2ay + 2awAnswer(c)(ii) [2] (iii) $4x^2 - 49$ Answer(c)(iii) [1] -----

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(d) Solve the equation.

 $2x^2 + 5x + 1 = 0$

Show all your working and give your answers correct to 2 decimal places.

Answer(d) x = or x =[4]



When p = 4, m = 8.

Find the value of p when m = 11.

Answer(a) p =[3]

(b) (i) Factorise $x^2 - 25$.

Answer(b)(i) [1]

(ii) Simplify $\frac{2x^2 + 11x + 5}{x^2 - 25}$.

Answer(b)(ii) [3]

(c) Solve the inequality 5(x-4) < 3(12-x).

5(x-4) < 3(12-x).

Answer(c) [3]







(b) Find the value o	fx.		
		Answer(b) $x =$	[3]
(c) Calculate the act	ute angle between the diag	ionals of the rectangle.	
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		Answer(c)	[3]



11) November 2011 V3

5 (a) The cost of a bottle of juice is 5 cents more than the cost of a bottle of water. Mohini buys 3 bottles of water and 6 bottles of juice. The total cost is \$5.25.

Find the cost of a bottle of water. Give your answer in cents.

Answer(a) cents [4]

(b) The cost of a biscuit is x cents. The cost of a cake is (x + 3) cents. The number of biscuits Roshni can buy for 72 cents is 2 more than the number of cakes she can buy for 72 cents.

(i) Show that $x^2 + 3x - 108 = 0$.

Answer(b)(i)

(ii) Solve the equation

 $x^2 + 3x - 108 = 0.$

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Answer(b)(ii) x = [3]

(iii) Find the total cost of 2 biscuits and 1 cake.

Answer(b)(iii) cents [1]

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20

[3]

6

- (a) A parallelogram has base (2x 1) metres and height (4x 7) metres. The area of the parallelogram is 1 m^2 .
 - (i) Show that $4x^2 9x + 3 = 0$.

Answer (a)(i)

(ii) Solve the equation $4x^2 - 9x + 3 = 0$.

Show all your working and give your answers correct to 2 decimal places.

Answer(a)(ii) x = or x = [4] (iii) Calculate the height of the parallelogram.

Answer(a)(iii) [[1]]

[3]





10 (a) Simplify

(i) $(2x^2y^3)^3$,

Answer(a)(i) [2] (ii) $\left(\frac{27}{x^6}\right)^{-\frac{1}{3}}$. Answer(a)(ii) [3] (b) Multiply out and simplify. (3x - 2y)(2x + 5y)Answer(b) [3] (c) Make *h* the subject of (i) $V = \pi r^3 + 2\pi r^2 h$, Answer(c)(i) h =[2] (ii) $V = \sqrt{3h}$. Answer(c)(ii) h =[2] aths.com (d) Write as a single fraction in its simplest form. $\frac{x}{2} + \frac{5x}{3} - \frac{7x}{4}$

Answer(d) [2]

12 (a) The cost of 1 kg of tomatoes is \$x and the cost of 1 kg of onions is \$y. Ian pays a total of \$10.70 for 10 kg of tomatoes and 4 kg of onions. Jao pays a total of \$10.10 for 8 kg of tomatoes and 6 kg of onions. Write down simultaneous equations and solve them to find x and y.

Answer(a) x = [6]

(b) Solve $2x^2 - 5x - 8 = 0$.

Give your answers correct to 2 decimal places. Show all your working.

Answer(b) x = [4]

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10 (a) Rice costs x per kilogram. Potatoes cost (x + 1) per kilogram. The total cost of 12 kg of rice and 7 kg of potatoes is \$31.70. Find the cost of 1 kg of rice. Answer(a) \$ [3] (b) The cost of a small bottle of juice is y. The cost of a large bottle of juice is (y + 1). When Catriona spends \$36 on small bottles only, she receives 25 more bottles than when she spends \$36 on large bottles only. (i) Show that $25y^2 + 25y - 36 = 0$. Answer(b)(i) [3] (ii) Factorise $25y^2 + 25y - 36$. 111111. Answer(b)(ii) [2] - -(iii) Solve the equation $25y^2 + 25y - 36 = 0$. Answer(b)(iii) y = _____ or y = _____ [1] (iv) Find the total cost of 1 small bottle of juice and 1 large bottle of juice. Answer(b)(iv) \$ [1]

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18) November 2012 V2

3 (a) (i) Factorise completely the expression $4x^2 - 18x - 10$.

(ii) Solve $4x^2 - 18x - 10 = 0$.

 $Answer(a)(ii) x = \qquad or x = \qquad [1]$

Answer(a)(i)

(b) Solve the equation $2x^2 - 7x - 10 = 0$.

Show all your working and give your answers correct to two decimal places.

Answer(b) x = [4]

(c) Write $\frac{6}{3x-1} - \frac{2}{x-2}$ as a single fraction in its simplest form.

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Answer(c) [3]

[3]

<u>5</u> (a)	Marcos buys 2 bottles of water and 3 the total cost is \$3.60. The cost of one bottle of lemonade is 5 Find the cost of one bottle of water.	50.25 more than the cost of	one bottle of water.
		Answer(a) \$	[4]
(b)	5 cm ² y cm	6 cm ²	Y cm NOT TO SCALE
	The diagram shows two rectangles. The first rectangle measures x cm by y The second rectangle measures $(x + 2)$ (i) When $y + Y = 1$, show that $x^2 - Answer (b)(i)$	y cm and has an area of 5 cm o cm by Y cm and has an area 9x - 10 = 0	n ² . ea of 6 cm ² .
	(ii) Factorise $x^2 - 9x = 10$.		[4]
	(iii) Calculate the perimeter of the first	<i>Answer(b)</i> (ii)	[2]
	(iii) Calculate the perimeter of the first	Answer(b)(iii) cm [2]
		Q8M aths.com	29



The diagram shows a right-angled triangle with sides of length 5 cm, (x + 3) cm and (2x + 3) cm.

(i) Show that $3x^2 + 6x - 25 = 0$.

Answer (c)(i)

(c)

(ii) Solve the equation $3x^2 + 6x - 25 = 0$. Show all your working and give your answers correct to 2 decimal places.

Answer(c)(ii) x = ______ or x =[4]

(iii) Calculate the area of the triangle.

Answer(c)(iii) cm^2 [2]

30

[4]

20) Jur	ne 20)13	<u>V2</u>					
	5	5 Paul buys a number of large sacks of fertiliser costing x each.						
		He	spends \$27.					
		(a)	Write down, in terms of x , an expression for the number of large sacks which Paul buys.					
			Answer(a)[1]					
		(b)	Rula buys a number of small sacks of fertiliser. Each small sack costs \$2 less than a large sack. Rula spends \$25.					
			Write down, in terms of <i>x</i> , an expression for the number of small sacks which Rula buys.					
			Answer(b)[1]					
		(c)	Rula buys 4 more sacks than Paul. Write down an equation in x and show that it simplifies to $2x^2 - 3x - 27 = 0$.					
			Answer(c)					
			[4]					
		(d)	Solve $2x^2 - 3x - 27 = 0$.					
			uuu. Q8 Maths.com					
			<i>Answer</i> (<i>d</i>) $x =$ or $x =$					

(e) Calculate the number of sacks which Paul buys.

Answer(e) [1]

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21) June 2013 V2 10 (a) Write as a single fraction (i) $\frac{5}{4} - \frac{2x}{5}$, (ii) $\frac{4}{x+3} + \frac{2x-1}{3}$. Answer(a)(ii) [3] (b) Solve the simultaneous equations. 9x - 2y = 123x + 4y = -10www.Q8Maths.com Answer(b) $x = \dots$ www.Q8M aths.com 32



22) June 2013 V3		
10 (a) (i)	Solve $2(3x - 7) = 13$.	
(ii)	Solve by factorising $x^2 - 7x + 6 = 0$.	Answer(a)(1) x =
	21 2 1 2	Answer(a)(ii) $x =$ or $x =$
(iii)	Solve $\frac{3x-2}{5} + \frac{x+2}{10} = 4.$	
	www. 287	Maths.com
		$Answer(a)(iii) x = \dots [4]$

23) November 2013 V1

8 (a) Solve the equation $8x^2 - 11x - 11 = 0$. Show all your working and give your answers correct to 2 decimal places.

- (b) y varies directly as the square root of x. y = 18 when x = 9.

Find *y* when x = 484.

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(c) Sara spends x on pens which cost 2.50 each. She also spends (x - 14.50) on pencils which cost 0.50 each. The **total** of the number of pens and the number of pencils is 19.

Write down and solve an equation in x.

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24) November 2013 V2

3 (a) Write as a single fraction in its simplest form.

(b) Expand and simplify.
(c) (i) Factorise.

$$2x^2 + 5x - 3$$

(ii) Simplify.
 $2x^2 + 5x - 3$
(iii) Simplify.
 $2x^2 + 5x - 3$
(iv) Simplify.
(iv) Si

8 (a) Rearrange $s = ut + \frac{1}{2}at^2$ to make *a* the subject.

 $Answer(a) a = \dots [3]$

(b) The formula v = u + at can be used to calculate the speed, v, of a car.

u = 15, a = 2 and t = 8, each correct to the nearest integer.

Calculate the upper bound of the speed v.



27) June 2014 V2

- 8 The distance a train travels on a journey is 600 km.
 - (a) Write down an expression, in terms of x, for the average speed of the train when
 - (i) the journey takes *x* hours,

Answer(a)(i) km/h [1]

(ii) the journey takes (x + 1) hours.

Answer(a)(ii) km/h [1]

- (b) The difference between the average speeds in part(a)(i) and part(a)(ii) is 20 km/h.
 - (i) Show that $x^2 + x 30 = 0$.

Answer(b)(i)

(ii) Find the average speed of the train for the journey in part(a)(ii). Show all your working. [3]

Answer(b)(ii) km/h [4]

28) June 2014 V3

8 (a) (i) Show that the equation $\frac{7}{x+4} + \frac{2x-3}{2} = 1$ can be simplified to $2x^2 + 3x - 6 = 0$.

Answer(a)(i)

[3]

(ii) Solve the equation $2x^2 + 3x - 6 = 0$.

Show all your working and give your answers correct to 2 decimal places.

(b) The total surface area of a cone with radius x and slant height 3x is equal to the area of a circle with radius r.

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Show that r = 2x. [The curved surface area, *A*, of a cone with radius *r* and slant height *l* is $A = \pi r l$.]

Answer(b)

[4]

29) November 2014 V1

2 (a) Rearrange the formula $v^2 = u^2 - 2as$ to make *u* the subject.

 $Answer(a) u = \dots \qquad [2]$

- (b) Chuck cycles along Skyline Drive. He cycles 60 km at an average speed of x km/h. He then cycles a further 45 km at an average speed of (x + 4) km/h. His total journey time is 6 hours.
 - (i) Write down an equation in x and show that it simplifies to $2x^2 27x 80 = 0$.

Answer(b)(i)

(ii) Solve $2x^2 - 27x - 80 = 0$ to find the value of x.

[4]

 $Answer(b)(ii) x = \dots [3]$

30) November 2014 V1 (a) Expand and simplify. 4 (i) 4(2x-1) - 3(3x-5)(ii) (2x - 3y)(3x + 4y)(b) Factorise. $x^3 - 5x$ Answer(b) [1] (c) Solve the inequality. $\frac{2x+1}{3} \le \frac{5x-8}{4}$ www.Q8Maths.com

Answer(*c*)[3]

31) November 2014 V2	
2 (a) Solve the inequality. 7x-5 > 3(2-5x)	
Answer(a)[3	3]
(b) (i) Factorise completely. $pq - 2q - 8 + 4p$	
(ii) Factorise. $9p^2 - 25$ [2]	2]
Answer(b)(ii)	[]
(c) Solve this equation by factorising. $5x^2 + x - 18 = 0$	
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$Answer(c) \ x = \dots$ or $x = \dots$ [3]	3]
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10 (a)



(i) Write an expression, in terms of x, for the perimeter of the quadrilateral. Give your answer in its simplest form.

Answer(a)(i) cm [2]

(ii) The perimeter of the quadrilateral is 32 cm.

Find the length of the longest side of the quadrilateral.

Answer(*a*)(ii) cm [3]



Write two equations in terms of a and b and simplify them. Use an algebraic method to find the values of a and b. Show all your working.

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 $Answer(b) a = \dots$

34) June 2015 V1

8 (a) Jamil, Kiera and Luther collect badges. Jamil has *x* badges. Kiera has 12 badges more than Jamil. Luther has 3 times as many badges as Kiera. Altogether they have 123 badges.

Form an equation and solve it to find the value of *x*.

 $Answer(a) x = \dots [3]$

(b) Find the integer values of t which satisfy the inequalities.

 $4t + 7 < 39 \le 7t + 2$

(c) Solve the following equations.

(i)
$$\frac{21-x}{x+3} = 4$$

 $Answer(c)(i) x = \dots [3]$

(ii) $3x^2 + 7x - 5 = 0$

Show all your working and give your answers correct to 2 decimal places.

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35) June 2015 V1 11 (a) Make x the subject of the formula. $A - x = \frac{xr}{t}$ (b) Find the value of a and the value of b when $x^2 - 16x + a = (x + b)^2$. [4]

Answer(b) $a = \dots$ [3]

(c) Write as a single fraction in its simplest form.

$$\frac{6}{x-4} - \frac{5}{3x-2}$$

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36) June 2015 V2

3 On the first part of a journey, Alan drove a distance of x km and his car used 6 litres of fuel.

The rate of fuel used by his car was $\frac{600}{r}$ litres per 100 km.

- (a) Alan then drove another (x + 20) km and his car used another 6 litres of fuel.
 - (i) Write down an expression, in terms of x, for the rate of fuel used by his car on this part of the journey.Give your answer in litres per 100 km.

Answer(a)(i) litres per 100 km [1]

(ii) On this part of the journey the rate of fuel used by the car decreased by 1.5 litres per 100 km.

Show that $x^2 + 20x - 8000 = 0$.

Answer(a)(ii)

(b) Solve the equation $x^2 + 20x - 8000 = 0$.

- (c) Find the rate of fuel used by Alan's car for the complete journey. Give your answer in litres per 100 km.

Answer(c) litres per 100 km [2]

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[4]



(d) *n* is an integer.

(i) Explain why 2n-1 is an odd number.

(ii) Write down, in terms of n, the next odd number after 2n - 1.

(iii) Show that the difference between the squares of two consecutive odd numbers is a multiple of 8.*Answer(d)*(iii)

[3]

38) June 2015 V3

- 7 (a) The total surface area of a cone is given by the formula $A = \pi r l + \pi r^2$.
 - (i) Find A when r = 6.2 cm and l = 10.8 cm.

Answer(a)(i) cm² [2]

(ii) Rearrange the formula to make *l* the subject.

 $Answer(a)(ii) l = \dots [2]$

(b) (i) Irina walks 10 km at 4 km/h and then a further 8 km at 5 km/h.

Calculate Irina's average speed for the whole journey.

Answer(b)(i) km/h [3]

(ii) Dariella walks x km at 5 km/h and then runs (x + 4) km at 10 km/h. The average speed of this journey is 7 km/h.

Find the value of *x*. Show all your working.

 $Answer(b)(ii) x = \dots [5]$

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(c) (i) Priyantha sells her model car for \$19.80 at a profit of 20%.

Calculate the original price of the model car.

Answer(c)(i) \$.....[3]

(ii) Dev sells his model car for x at a profit of y%.

Find an expression, in terms of x and y, for the original price of this model car. Write your answer as a single fraction.

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Answer(c)(ii) \$.....[3]

39) November 2015 V1

(a) Factorise $x^2 - 3x - 10$. 8 (b) (i) Show that $\frac{x+2}{x+1} + \frac{3}{x} = 3$ simplifies to $2x^2 - 2x - 3 = 0$. Answer(b)(i) [3] (ii) Solve $2x^2 - 2x - 3 = 0$. Give your answers correct to 3 decimal places. Show all your working. (c) Simplify $\frac{2x+3}{x+2} - \frac{x}{x+1}$. www.Q8Maths.com

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42) March 2015 V2 (a) Factorise $121y^2 - m^2$. 4 (b) Write as a single fraction in its simplest form. $\frac{4}{3x-5} + \frac{x+2}{x-1}$ *Answer(b)* [3] (c) Solve the equation. $3x^2 + 2x - 7 = 0$ Show all your working and give your answers correct to 2 decimal places. www.Q8Maths.com

(d) In this part, all lengths are in centimetres.



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(c)
$$W = \sqrt{\frac{X-a}{a}}$$

Make *a* the subject of the formula.

......[5]

(d) Write as a single fraction in its simplest form.

$$\frac{x-2}{x+1} - \frac{x+3}{x-1}$$

44) June 2016 V1 6 (a) x cm NOT TO SCALE The perimeter of the rectangle is 80 cm. The area of the rectangle is $A \text{ cm}^2$. (i) Show that $x^2 - 40x + A = 0$. (ii) When $A = 300$, solve, by factorising, the equation $x^2 - 40x + A = 0$. (iii) When $A = 200$, solve, by using the quadratic formula, the equation $x^2 - 40x + A = 0$.
6 (a) $x \operatorname{cm} \qquad \operatorname{NOT TO}_{SCALE}$ The perimeter of the rectangle is 80 cm. The area of the rectangle is 4 cm ² . (i) Show that $x^2 - 40x + A = 0$. (ii) When $A = 300$, solve, by factorising, the equation $x^2 - 40x + A = 0$. $x = \dots \text{or } x = $
The perimeter of the rectangle is 80 cm. The area of the rectangle is $A \operatorname{cm}^2$. (i) Show that $x^2 - 40x + A = 0$. (ii) When $A = 300$, solve, by factorising, the equation $x^2 - 40x + A = 0$. (iii) When $A = 200$, solve, by using the quadratic formula, the equation $x^2 - 40x + A = 0$. (iii) When $A = 200$, solve, by using the quadratic formula, the equation $x^2 - 40x + A = 0$.
(i) Show that $x^2 - 40x + A = 0.$ (i) When $A = 300$, solve, by factorising, the equation $x^2 - 40x + A = 0.$ (ii) When $A = 200$, solve, by using the quadratic formula, the equation $x^2 - 40x + A = 0$
(ii) When $A = 300$, solve, by factorising, the equation $x^2 - 40x + A = 0$. $x = \dots \text{ or } x = \dots [3]$ (iii) When $A = 200$, solve, by using the quadratic formula, the equation $x^2 - 40x + A = 0$
(iii) When $A = 200$, solve, by using the quadratic formula, the equation $x^2 - 40x + A = 0$
(III) When $A = 200$, solve, by using the quadratic formula, the equation $x^2 - 40x + A = 0$
Show all your working and give your answers correct to 2 decimal places.
$x = \dots $ or $x = \dots $ [4]

- (b) A car completes a 200 km journey with an average speed of x km/h. The car completes the return journey of 200 km with an average speed of (x + 10) km/h.
 - (i) Show that the difference between the time taken for each of the two journeys is $\frac{2000}{x(x+10)}$ hours.

[3]

(ii) Find the difference between the time taken for each of the two journeys when x = 80. Give your answer in **minutes** and **seconds**.

..... min s [3]

45) June 2016 V2

- 2 (a) Work out the value of x in each of the following.
 - (i) $3^x = 243$



48) June 201	16 V3
2 (a)	Solve the inequality. $5 - 2 > 0$
	5x - 3 > 9
	[2]
(b)	Factorise completely.
	(i) $xy - 18 + 3y - 6x$
	(ii) $8x^2 - 72y^2$
	[3]
(c)	Make <i>r</i> the subject of the formula. $p+5 = \frac{1-2r}{r}$
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	r =[4]

7 Alfonso runs 10 km at an average speed of x km/h. The next day he runs 12 km at an average speed of (x - 1) km/h.

The time taken for the 10 km run is 30 minutes less than the time taken for the 12 km run.

(a) (i) Write down an equation in x and show that it simplifies to $x^2 - 5x - 20 = 0$.

(ii) Use the quadratic formula to solve the equation $x^2 - 5x - 20 = 0$. Show your working and give your answers correct to 2 decimal places.

(iii) Find the time that Alfonso takes to complete the 12 km run. Give your answer in hours and minutes correct to the nearest minute.

...... hours minutes [2]

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[4]








53) June 2018 V2	
4 (a) Simplify.	
(i) $(3p^2)^5$	
	[2]
(ii) $18x^2y^6 \div 2xy^2$	
$()$ $(5)^{2}$	
(iii) $\left(\frac{\overline{m}}{\overline{m}}\right)$	
(b) In this part, all measurements are in the	etres.
5x4	
W	NOT TO SCALE
3	7
The diagram shows a rectangle. The area of the rectangle is 310 m^2 .	
Work out the value of <i>w</i> .	
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	w = [4]
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9 (a) (i) Write $x^2 + 8x - 9$ in the form $(x+k)^2 + h$.

(ii) Use your answer to part (a)(i) to solve the equation $x^2 + 8x - 9 = 0$.

 $x = \dots$ or $x = \dots$ [2]

(b) The solutions of the equation $x^2 + bx + c = 0$ are $\frac{-7 + \sqrt{61}}{2}$ and $\frac{-7 - \sqrt{61}}{2}$.

Find the value of b and the value of c.

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- (f) Alan invests \$200 at a rate of r% per year compound interest. After 2 years the value of his investment is \$206.46.
 - (i) Show that $r^2 + 200r 323 = 0$.



[3]

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[3]