

Algebra Higher Answers

GCSE Mathematics



Starters

Factorising	$(4x + 6)(4x - 6)$	(1)	(1)
Sequences	$-4n + 21$	(1)	(1)
Expanding Brackets	$a^2 + 2a - 3a - 6$	(1)	
	$a^2 - a - 6$	(1)	
Solving Linear Equations	$3x = 21$	(1)	
	$x = 7$	(1)	
Rules of Indices	$\frac{20x^3y^5}{2x^4y^3} = 10x^{-1}y^2$	(1)	(1)
Solving Inequalities	$-9 < 3x \leq 6$	(1)	
	$-3 < 3x \leq 2$	(1)	

Main Course

Consecutive Numbers	$x^2 + (x + 1)^2 + (x + 2)^2 = 245$	(1)	
	$3x^2 + 6x - 240 = 0$	(1)	
	$(x - 8)(x + 10) = 0$	(1)	
	$x = 8 \quad x + 1 = 9 \quad x + 2 = 10$	(1)	
Acceleration	Tangent drawn (1) $\frac{40 - 0}{8 - 2} = 6.7\text{m/s}^2$	(1)	
	Use of trapezium rule gives $2 + 6 + 10 + 14 + 19 = 51 \text{ m}$	(1)	
Cinema Ticket Prices	$2a + 3c = 31.15$	(1)	
	$3a + 2c = 35.35$	(1)	

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	$a = £8.75$	(1)
	$17.5 + 3c = 31.15$	(1)
	$c = £4.55$	(1)
Quadratic Equations	$2[(x+1)(x+3) + (2x+5)(x+1) + (2x+5)(x+3)] = 382$	(1)
	$5x^2 + 22x - 168 = 0$	(1)
	$(5x + 42)(x - 4) = 0$	(1)
	Dimensions 5cm, 13cm and 7cm	(1)
Volume of Triangular Prism	$2x+4 : x+2 : 3x+6$	(1)
	$\frac{(2x+4)(x+2)(3x+6)}{2}$	(1)
	$(x^2 + 4x + 4)(3x + 6)$	(1)
	$3x^3 + 18x^2 + 36x + 24$	(1)
Calculating Speed	$\frac{10}{L+3} = \frac{6}{L}$	(1)
	$10L = 6L + 18$	(1)
	$4L = 18$	(1)
	$L = 4.5\text{km/h}$	(1)
	$K = 7.5\text{km/h}$	(1)
Points of Intersection	$x^2 + y^2 = 25$	(1)
	$x^2 + (x+1)^2 = 25$	(1)
	$(x+4)(x-3) = 0$	(1)
	$(-4, -3)$ and $(3, 4)$	(2)

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Dessert

Parallel and Perpendicular Lines If lines are perpendicular gradients multiply to give -1 (1)

$$2x - \frac{1}{2} = -1 \quad (1)$$

Simplifying Expressions $\frac{2x^2 - 9x - 5}{3x - 15} = \frac{(2x+1)(x-5)}{3x-15}$ (1)

$$\frac{2x+1}{3} \quad (1)$$

Expanding Brackets $(2x-8)(2x-8)$ (1)

$$4x^2 - 32x + 64 \quad (1)$$

Sketching Quadratic Graphs Complete the Square gives min at (4,-1) (1)

Factorise to find roots at (3,0) and (5,0) (1)

Odd x Odd $2n$ even therefore $2n+1$ and $2n-1$ odd (1)

$$(2n+1)(2n-1) = 4n^2 - 1 \text{ odd because } 4n^2 \text{ even} \quad (1)$$

Algebraic Fractions LCM = 6 (1)

$$\frac{3(4x+3)}{6} - \frac{2(2x-1)}{6} \quad (1)$$

$$\frac{12x+9-4x+2}{6} = \frac{8x+11}{6} \quad (1)$$

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Drinks

Completing the Square	$(x - 2)^2 + 5$	(1)	(1)
Equation of a Circle	Radius = 9	(1)	
	Diameter = 18	(1)	
Inequalities	$y \geq x - 2$	(1)	
	$x \geq -3$	(1)	
	$y \leq 5$	(1)	
Equation of the Line	Gradient $\frac{9-3}{4-1} = 2$	(1)	
	$3 = 2(1) + c$		
	$c = 1$		
	$y = 2x + 1$	(1)	
Subject of the Formula	$4x - xy = 5 - 3y$	(1)	
	$y(3 - x) = 5 - 4x$	(1)	
	$y = \frac{5 - 4x}{3 - x}$	(1)	
Patterns	Purple Tiles n^2	(1)	
	Blue Tiles $2n$	(1)	
	Total No of tiles $n^2 + 2n$	(1)	