Maths For Fun – Algebra Level 1

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Code Breaker (Easy)

Each correct answer gives a number. Use the scrambled letter map to translate those numbers into letters. The five letters you uncover form an anagram - solve it to unlock the codeword. Round normally to get to a rational number, if needed.

Letter Map

−3 = O | 2 = R | 7 = M | 4 = A | 9 = A
−2 = L | 6 = T | 12 = E | −1 = D | 8 = S

Questions

1. Solve: $4(x - 2) + 3 = 31$

2. Expand and simplify: $(x + 3)(x + 4)$ - what is the constant term?

3. Solve: $x^2 + x - 6 = 0$ - use the positive solution

4. Solve: $(2x + 3) + 2(x - 1) = 29$

5. Factorise: $x^2 + 5x + 6$ - what is the larger solution?

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Chain Reaction (Easy)

Each answer you find is used inside the next question. Work through the full chain carefully - if you get one wrong, it affects the rest!

1. Solve: $2x + 3 = 13$

2. Use your answer from Q1 as “a”. Now solve: $a + x = 12$

3. Use your answer from Q2 as “b”. Now expand and simplify: $(x + b)(x + 1)$ - what is the constant term?

4. Use your answer from Q3 as “c”. Now solve: $(c + x)/2 = 7$

5. Use your answer from Q4 as “d”. Now factorise: $x^2 + (d)x + 12$

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Riddle Solver (Easy)

Sam is filling small boxes with chocolates to give out as gifts. Each box is supposed to contain the same number of chocolates. After filling 4 boxes, he realises he only has 10 chocolates left, even though he expected to have 2 full boxes remaining. If each box was meant to have the same number of chocolates, how many were there in total to begin with?

Tangle Trap (Easy)

Solve for x:
$(x + 2)(x - 1) + 2x = x(x + 1) + (x + 3)$

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Variable Vault (Easy)

Four lettered dials (A, B, C, D) unlock a vault. Each dial must be set to the correct number based on the clues below. Solve all clues to find the code: the 4-digit number **ABCD**.

Clues:

1. A + B = 10
2. C = A - 2
3. D = 2B
4. A × D = 48
5. A = 6

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Equation Detective (Easy)

Three friends - Maya**,** Ben**,** and Sophie - each bought a different item (smoothie, sandwich, or fruit pot) on a different day (Tuesday, Thursday, or Friday). The prices of the items are all different, and your job is to work out who bought what, on which day, and how much they spent**.**

Clues:

1. The sandwich cost **x** pounds.
2. The fruit pot cost **x - 1**, and the smoothie cost **x + 2**.
3. Sophie bought her item on Thursday.
4. Ben did **not** buy the smoothie or the sandwich.
5. The person who bought the smoothie paid £6.
6. Maya bought her item on Friday and paid £6.

Name	Day	Item	Price

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Grid Sum (Easy)

Each row and column must add up to the totals shown - but all the values are algebra expressions. Work out the value of x, then fill in the grid using each expression once.

Available Expressions (use each exactly once):

1. x
2. x + 1
3. x + 2
4. x - 1
5. 2x
6. 3x
7. x^2
8. $x^2 - 1$
9. $x^2 + 1$

	18	**21**	**17**
15	X^2		X - 1
19		$X^2 - 1$	
22	X		

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Code Breaker (Medium)

Each correct answer gives a number. Use the scrambled letter map to translate those numbers into letters. The five letters you uncover form an anagram - solve it to unlock the codeword. Round normally to get to a rational number, if needed.

Letter Map

4 = L | 5 = I | 6 = G | 7 = H | 8 = O
9 = C | 10 = S | 11 = T | 12 = N | 13 = R

Questions

1. $(x - 3)(x + 3) + 2x = 13 + x^2$

2. $2(x + 2) + 3(x - 1) - 2 = x + 4 + 3x - 1$

3. $4x - (2x - 3) + 2(x - 1) = 25$

4. $(x + 3)(x - 2) - (x - 1)(x + 1) + x = 5$

5. $3x + 2(x + 1) = 4x + 9$

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Chain Reaction (Medium)

Each answer you find is used inside the next question. Work through the full chain carefully - if you get one wrong, it affects the rest!

1. Solve: $2(x + 4) + 3(x - 2) = 3x + 8$

2. Use your answer from Q1 as “a”. Now solve: $4x - (2a - x + 1) = 13$

3. Use your answer from Q2 as “b”. Expand and simplify: $(x + 3)(x + b) - x^2$ — what is the coefficient of x?

4. Use your answer from Q3 as “c”. Solve: $5x - c = 15$

5. Use your answer from Q4 as “d”. Factorise: $x^2 - dx + 4.84$

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Riddle Solver (Medium)

Liam bought two art sets and one drawing pad. Priya bought one art set and two drawing pads, but used a 10% discount voucher on her total. A drawing pad costs £6.

The combined total of what they both paid was £63.
How much does one art set cost?

Tangle Trap (Medium)

Solve for x:
$1.5(x + 2) + (3x - 4) - [2x - (x - 1)] = 4x + 1.5 - (x - 2)$

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Variable Vault (Medium)

Four lettered dials (A, B, C, D) unlock a vault. Each dial must be set to the correct number based on the clues below. Solve all clues to find the code: the 4-digit number **ABCD**.

Clues:

1. A + B = C + D + 1
2. A = 2D
3. C = B + 3
4. A + B + C + D = 27
5. B = A - 2

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Equation Detective (Medium)

Four friends — Mia, Lucas, Aria, and Theo — each bought a different lunch item (wrap, juice, salad, or pasta) on a different day (Monday, Tuesday, Thursday, or Friday). Each item cost a different amount.

Clues:

1. The wrap cost £1 more than the salad.
2. The juice is twice the cost of the wrap.
3. Aria didn't buy her item on Tuesday or Thursday.
4. Theo bought the salad.
5. Lucas paid £6 on Tuesday.
6. The total cost of Aria and Mia's items was £15.
7. The wrap cost £5.
8. Mia purchased the juice, the day before Lucas.

Name	Day	Item	Price

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Grid Sum (Medium)

Each row and column must add up to the totals shown - but all the values are algebra expressions. Work out the value of x, then fill in the grid using each expression once.

Available Expressions (use each exactly once):

1. $2(x + 1)$
2. $(x + 3)(x - 1)$
3. $(x + 1)^2$
4. $(x - 2)(x + 2)$
5. $3x + 2(x - 1)$
6. $x^2 + 2x + 1$
7. $(x + 2)(x - 1)$
8. $x^2 - x + 3$
9. $4x - (x + 2)$

	13	**19**	**18**
11	$(X - 2)(X + 2)$		$X^2 – x + 3$
18		$4X – (X + 2)$	
21			$(X + 2)(X - 1)$

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Code Breaker (Hard)

Each correct answer gives a number. Use the scrambled letter map to translate those numbers into letters. The five letters you uncover form an anagram - solve it to unlock the codeword. Round normally to get to a rational number, if needed.

Letter Map

1 = F | 2 = Z | 3 = F | 4 = S | 5 = T
6 = E | 7 = A | 8 = L | 9 = R | 10 = O

Questions

1. $(x + 2)^2 - (2x - 1) + x + 13 = x^2 + 5x + 6$

2. $x^2 + 3x + 2 - (x - 1)^2 = (x + 2)(x - 1) + 6$

3. $2(x - 2)(x + 1) + x^2 = (x + 1)^2 + x(x - 4) + 11$

4. $(x + 3)(x - 2) - 2x^2 + 1 = (x - 1)^2 + x - 2x^2 + 10$

5. $(x - 1)(x + 4) + 2x + (x + 2)^2 = 2x^2 + 7x + 12$

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Chain Reaction (Hard)

Each answer you find is used inside the next question. Work through the full chain carefully - if you get one wrong, it affects the rest!

1. Solve: $(x + 3)^2 - (2x - 1)(x - 2) = 22 + (x)(x) + 6x - 2x^2$

2. Use your answer from Q1 as “a”. Now solve: $(a + x)(x - 1)(x + 9) = 33 + x^3 + 11x^2$

3. Use your answer from Q2 as “b”. Find the coefficient of x in the expansion of: $(x + b)(x + 4)$

4. Use your answer from Q3 as “c”. Solve: $2x^2 - cx + 9 = 7 + 2x(x - 4) + x$

5. Use your answer from Q4 as “d”. Factorise: $x^2 - 6dx + 20$

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Riddle Solver (Hard)

Amira, Joel, and Priya each bought the same smart speaker.

Amira also bought a lamp for £22. Joel used a 25% discount on his total. Priya paid full price but used a £10 gift card.

Altogether, they spent £314.50.
How much did one smart speaker cost?

Tangle Trap (Hard)

Solve for x:
$(x + 3)^2 - [(x - 2)(x + 1) - (2x - 1)] + x(x - 4) = x + (x + 2)(x + 1) + (x^2 - x) - [x(x - 3) - 4]$

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Variable Vault (Hard)

Four lettered dials (A, B, C, D) unlock a vault. Each dial must be set to the correct number based on the clues below. Solve all clues to find the code: the 4-digit number **ABCD**.

Clues:

1. The difference between A and B is 5 less than D.
2. C is equal to (A + B) ÷ 2.
3. A = B + 2
4. A + B + C + D = 22
5. D is an odd number greater than 5.
6. B = 10 - A

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Equation Detective (Hard)

Four friends — Ethan, Chloe, Mason, and Isla — each bought a different item: smoothie, panini, salad, or pasta. Each purchased on a different weekday (Monday, Tuesday, Wednesday, or Friday). Each item had a different cost.

Clues:

1. The smoothie cost twice as much as the salad.
2. Chloe didn't buy anything on Monday or Friday.
3. Mason spent £1 less than Isla.
4. The pasta cost £9.
5. The total spent by Chloe and Ethan was £10.
6. Mason did not buy the pasta or the panini.
7. The panini cost £2 more than the salad.
8. Ethan's item cost £2 less than Chloe's.
9. Isla purchased her item on Wednesday.
10. Chloe did not buy the smoothie.
11. The smoothie cost £1 less than the pasta.
12. Ethan did not buy anything on Friday.

Name	Day	Item	Price

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Grid Sum (Hard)

Each row and column must add up to the totals shown - but all the values are algebra expressions. Work out the value of x, then fill in the grid using each expression once.

Available Expressions (use each exactly once):

1. $(x + 3)(x - 1)$
2. $(x - 3)^2 + x$
3. $x^2 + 2(x - 1)$
4. $x^2 + 5$
5. $x^2 + x + 4$
6. $(x + 2)^2 - 1$
7. $(2x + 1)(x - 2)$
8. $(x + 1)(x + 2)$
9. $3(x + 2) + x^2$

	75	**90**	**45**
73	$(X + 1)(X + 2)$		
74		$(X + 2)^2 - 1$	
63	$X^2 + X + 4$		

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