

a Find a value of n for which $n^2 + n + 11$ is not prime. $n = 10$ ($121 = 11 \times 11$) a counterexample by trying values	b Find a and b so that $4(x + a) + b(x - 2) \equiv 7x + 2$ $a = 2, b = 3$ two brackets, two unknowns	c Find a and b so that $(x + a)(x - 3) \equiv x^2 + bx - 15$ $a = 5, b = 2$ matching a product of brackets	d Find a and b so that $a(x + 2)^2 + b \equiv 3x^2 + 12x + 5$ $a = 3, b = -7$ a number outside a square
e Show that $3(2x + 1) - 2(x - 4) \equiv 4x + 11$ $6x + 3 - 2x + 8 = 4x + 11$ a minus before a bracket	f Show that $(x + 4)^2 - (x - 4)^2 \equiv 16x$ $x^2 + 8x + 16 - x^2 + 8x - 16$ subtracting a squared bracket	g Use n to write the product of two consecutive integers. $n(n + 1)$ consecutive integers multiplied	h Explain why $n(n + 1)$ is even for every integer n . $\text{one of } n \text{ and } n + 1 \text{ is even}$ explaining why a product is even
i Prove that the sum of three consecutive even numbers is a multiple of 6. $6n + 6 = 6(n + 1)$ consecutive even numbers	j Prove that $2(3n + 5) + 3(n - 3)$ is one more than a multiple of 9. $9n + 1$ one more than a multiple	k Prove that the sum of the squares of two consecutive integers is odd. $2(n^2 + n) + 1$ the sum of two squares is odd	l Prove that the product of two consecutive odd numbers is one less than a multiple of 4. $(2n - 1)(2n + 1) = 4n^2 - 1$ consecutive odd numbers multiplied

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