Test - Algebraic notation, expanding and factorising

Year: Year 10 · Duration: 45 minutes · /20

Name:	Date:	**Mark: /20**

Question	1	2	3	4	5	Total
marks	4	4	4	4	4	**20**
Mark						

Show your working.

Question 1 (4 marks)

Question 1 – Substituting and simplifying

Non-calculator. Given $p = 4$ and $q = -3$.

a. Work out $3p - 2q$. (2 marks)
b. Simplify $5x^2 + 3x - 2x^2 + 4x$. (2 marks)

Question 2 (4 marks)

Question 2 – Expanding and factorising

Calculator allowed.

a. Expand and simplify $(x + 7)(x - 3)$. (2 marks)
b. Factorise $x^2 - 8x + 15$. (1 mark)
c. Factorise fully $6x^2y - 9xy^2$. (1 mark)

Question 3 (4 marks)

Question 3 – Problem: the field

A rectangular field has length $(3x + 2)$ m and width $(x + 4)$ m. A farmer puts a fence round the field.

a. Show that the perimeter is $8x + 12$ metres. (2 marks)
b. The fence costs £5 per metre and the perimeter is 52 m. Find x and the total cost of the fence. (2 marks)

Question 4 (4 marks)

Question 4 – Proof

Show that $(2n+3)^2-(2n-3)^2$ is a multiple of 8 for every whole number n. (4 marks)

Question 5 (4 marks)

Question 5 – Higher: quadratics

Higher tier.

a. Factorise $2x^2-5x-12$. (2 marks)
b. Hence solve $2x^2-5x-12=0$. (1 mark)
c. Simplify $\dfrac{x^2-16}{x^2+x-12}$. (1 mark)