Test - Expanding brackets and substitution

Year: Year 7 · 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 – Substitution

Work out the value of each expression when x = 5 and y = -3.

a. $4x - 2y$ (1 mark)
b. $x^2 - y^2$ (1 mark)
c. $3(x + y)$ (1 mark)
d. $\frac{xy}{3}$ (1 mark)

Question 2 (4 marks)

Question 2 – Expanding and factorising

(a) Expand $4(3x - 2)$. (1 mark)
(b) Expand and simplify $2(x + 5) + 3(x - 1)$. (2 marks)
(c) Factorise $12y - 18$. (1 mark)

Question 3 (4 marks)

Question 3 – Using a formula

The cost, £C, of hiring a bicycle is given by C = 5 + 3h, where h is the number of hours.

a. Work out the cost of hiring a bicycle for 4 hours. (1 mark)
b. Work out the number of hours when the cost is £29. (2 marks)
c. Explain what the number 5 means in this formula. (1 mark)

Question 4 (4 marks)

Question 4 – Problem: the garden border

A rectangular flowerbed is (x + 4) metres long and x metres wide.

a. Write an expression for the area of the flowerbed and expand it. (2 marks)
b. Write an expression for the perimeter in simplest form. (1 mark)
c. The area is 45 m². Show that x = 5 works. (1 mark)

Question 5 (4 marks)

Question 5 – Problem: the concert tickets

The school music concert sells adult tickets at £a and child tickets at £c. A family buys 2 adult tickets and 3 child tickets and pays 2a + 3c. The school sells 40 family packs altogether.

a. Write an expression for the money from the family packs, in the form 40(2a + 3c), then expand it. (2 marks)
b. Adult tickets cost £8 and child tickets cost £5. Work out the money raised. (1 mark)
c. The school wants to raise £1 500 from family packs. By how much does it miss its target? (1 mark)