

8300

GCSE MATHEMATICS

Foundation and Higher tier – Questions by Topic

Algebra

Expanding double brackets

v1.0

Name _____

Materials

For this paper you must have:

- Mathematical instruments

Information

- The marks for questions are shown in brackets

Advice

- In all calculations, show clearly how you work out your answer

For question 1 you must **NOT** use a calculator.



Q1.

Multiply out and simplify $(x + 5)(x - 1)$

(Total 2 marks)

For questions 2 to 8, you may use a calculator.



Q2.

Expand and simplify $(y + 8)(y - 3)$

(Total 2 marks)

Q3.

Expand and simplify $(x + 6)(x - 3)$

(Total 2 marks)

Q4.

Multiply out and simplify $(x - 8)^2$

(Total 2 marks)

Q5.

Circle the expression that is equivalent to $(x - 1)^2$

$x^2 - 1$

$x^2 + 1$

$x^2 - 2x - 1$

$x^2 - 2x + 1$

(Total 1 mark)

Questions 6 to 12 are **higher** tier only

Q6.

Expand $(x^2 - 9xy)(2x + 5y)$

(Total 2 marks)

Q7.

Expand and simplify $(3x + 6y)(2x - 7y)$

(Total 3 marks)

Q8.

$(2x - 4)(3x + 5)$ is expanded and simplified.

Circle the term which is part of the answer.

$2x$

$-2x$

$22x$

$-22x$

(Total 1 mark)

Expanding double brackets – Cross-topic questions

For questions 9 to 11 you must **NOT** use a calculator.



Q9.

s and t are **positive** integers.

$(x + s)(x - t)$ is expanded and simplified.

The answer is $x^2 + kx - 40$ where k is a positive integer.

Work out the **smallest** possible value of k .

(Total 2 marks)

Q10.

$$(x + a)(x + 3a) \equiv x^2 + bx + 75$$

Work out the **two** possible values of b .

(Total 3 marks)

Q11.

Show that $(3x + 4)(2x - 5) - 11x(x - 2) + 5(x^2 - 3x - 1)$ simplifies to an integer.

(Total 4 marks)

For question 12, you may use a calculator.



Q12.

x is an integer.

Prove that $35 + (3x + 1)^2 - 2x(4x - 3)$ is a square number.

(Total 4 marks)