

Expanding the product of two brackets

Year 8 About 70 minutes No calculator 49 marks



Hints online, answers free with an account:

mathswariz.uk/worksheets/ks3-year-8-expanding-the-product-of-two-brackets/

Date _____

A Do Now

Quick questions to start.

- A1** Needed today [1 mark] **A2** Needed today [1 mark]
Expand $4(3x - 2)$. Work out -6×-9 .

Answer

Answer

- A3** Last lesson [1 mark] **A4** From chapter 2 [1 mark]
Write $\frac{x}{3} - \frac{x}{5}$ as a single fraction. Expand $x(2x - 7)$.

Answer

Answer

B Example, then your turn

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Your teacher works through each example with you. Then try the one beside it.

EXAMPLE 1Expand and simplify $(x + 5)(x + 7)$.

	x	7
x	x^2	$7x$
5	$5x$	35

Not drawn accurately

Hint Put one bracket along the top of a grid and the other down the side. Multiply to fill each box, then add the four boxes.

- B1** Expand and simplify [2 marks]
 $(y + 7)(y + 8)$.

Answer

EXAMPLE 2

Expand and simplify $(x - 2)(x + 8)$.

Hint Keep the sign with its number: the boxes are x^2 , $8x$, $-2x$ and $-2 \times 8 = -16$.

B2 Expand and simplify
 $(t + 1)(t - 8)$.

[2 marks]

Answer

EXAMPLE 3

Expand and simplify $(x - 8)^2$. Explain why the answer is not $x^2 + 64$.

Hint $(x - 8)^2$ means $(x - 8)(x - 8)$. Fill in all four boxes.

B3 Expand and simplify $(n + 12)^2$. [2 marks]

Answer

EXAMPLE 4

Expand and simplify $(3x + 4)(2x - 7)$.

Hint $3x \times 2x = 6x^2$. Then $3x \times -7$, $4 \times 2x$ and 4×-7 .

B4 Expand and simplify
 $(4x + 1)(x - 3)$.

[2 marks]

Answer

EXAMPLE 5

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

Hint The boxes are $2x^2$, $-6xy$, xy and $-3y^2$. $-6xy$ and xy are like terms.

B5 Expand and simplify
 $(x + 4y)(3x - y)$.

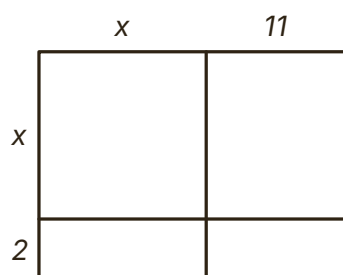
[3 marks]

Answer

C Practice

Year 8

- C1** The rectangle is split into four parts. Write down the area of each part. Then write the area of the whole rectangle, $(x + 11)(x + 2)$, as simply as possible. [3 marks]



Not drawn accurately

- C2** Expand and simplify $(5 - x)(2 + x)$. [2 marks]

Answer

Answer

- C3** Work out the missing number: $(x - 9)(x - \square) = x^2 - 11x + 18$. [2 marks]

Answer

- C4** Expand and simplify $(x + 5)^2 - (x + 1)(x + 9)$. [3 marks]

Answer

- C5** Show that $(3x + 6)^2$ is the same as $9(x + 2)^2$. [2 marks]

D Exam-style questions

GCSE Foundation

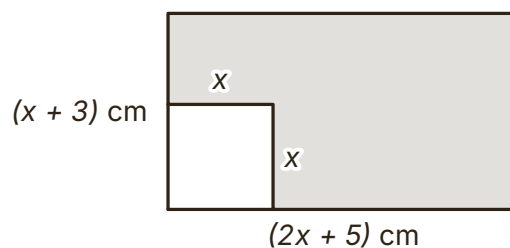
- D1** Ella says: " $(x + 14)^2 = x^2 + 196$." [3 marks]

Ella is wrong. Explain her mistake and expand $(x + 14)^2$ correctly.

Answer $(x + 14)^2 = \dots\dots$

D2 A square of side x cm is cut from the corner of a rectangle $(2x + 5)$ cm long and $(x + 3)$ cm wide. The shaded part is left.

- (a) Show that the shaded area is $(x^2 + 11x + 15) \text{ cm}^2$. [3 marks]



- (b) Work out the shaded area when $x = 4$. [2 marks]

Not drawn accurately

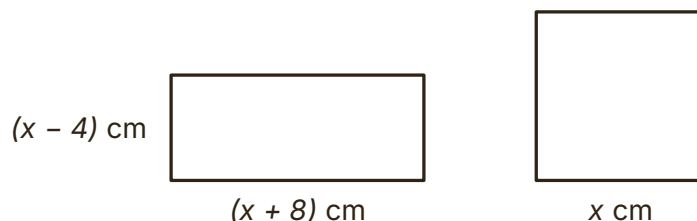
Answer

Total for D2: 5 marks

D3 Solve $(x + 7)(x + 10) = x^2 + 104$. [3 marks]

Answer

D4 A rectangle is $(x + 8)$ cm long and $(x - 4)$ cm wide. A square has sides of x cm. The area of the rectangle is 16 cm^2 more than the area of the square. Work out the value of x . [4 marks]



Answer

Not drawn accurately

D5 Here is an expression: $(2x - 7)^2$.

- (a) Expand and simplify $(2x - 7)^2$. [2 marks]

Answer

- (b) Use your answer with $x = 10$ to work out 13^2 . Show your working. [1 mark]

Answer

Total for D5: 3 marks

No route is given. The hints are at the end of the sheet. Use one at a time.

E1
 $(x + a)(x + b) = x^2 + 9x + c$, where a and b are positive whole numbers. Work out the largest possible value of c and the smallest possible value of c .

[4 marks]

Answer Largest smallest

Extension hints

Cover these with paper. Uncover one at a time.

- E1**

Hint 1
Expand $(x + a)(x + b)$. The x term is $(a + b)x$ and the number term is ab .

Hint 2
So $a + b = 9$. List the pairs: 1 and 8, 2 and 7, 3 and 6, 4 and 5.

Hint 3
Work out ab for each pair.

How did it go?

- Colour one circle on each line: not yet, nearly, yes.
- I can expand two brackets with a grid and collect like terms.

☐
☐
☐
- I can square a bracket without leaving out the middle terms.

☐
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- I can expand brackets with an x coefficient or two letters.

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- I can use expanding to solve equations and find areas.

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