2.13 Expanding Double Brackets: Test Pack

Calculators not allowed · about 60 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 Expand each pair of brackets. Write your answer in fully simplified form.

(a) Expand $(x + 3)(x + 5)$. **(1)**

(b) Expand $(2x - 1)(x + 4)$. **(1)**

(c) Expand $(x - 2)(x - 6)$. **(1)**

(d) Expand $(3x + 2)(x - 5)$. **(1)**

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2 Without expanding fully, state the coefficient of x^2 in the expansion of $(3x + 2)(5x - 1)$.

(2)

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3 A student expands $(x + 4)(x + k)$ and obtains $x^2 + (k + 4)x + 4k$. The student claims the coefficient of x is 10. Find k if the claim is correct.

(3)

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4 Stretch question. Expand and simplify fully, then factorise the result where possible: $(2x + 3)(x - 4) + (x + 1)(x - 2)$.

(3)

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5 Show that $x^2 + 13x + 40$ can be written as $(x + 5)(x + 8)$.

(3)

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6 Expand and simplify $5(x + 7) - 6(x - 5)$.

(3)

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7 Show that $5(x + 1) + 2(x + 1) = 7x + 7$.

(3)

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8 Show that $t^2 + 3t + 2$ can be written as $(t + 1)(t + 2)$.

(3)

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9 Square the binomial and simplify: $(x + 6)^2$.

(4)

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10 Expand and simplify $(b + 4)(b + 7)$.

(3)

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11 Expand and simplify $(b + 4)^2$.

(3)

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12 Show that $x^2 + 10x + 25$ can be written as $(x + 5)(x + 5)$.

(3)

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

(3)

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14 Without expanding fully, state the coefficient of x^2 in the expansion of $(4x + 3)(2x - 5)$.

(1)

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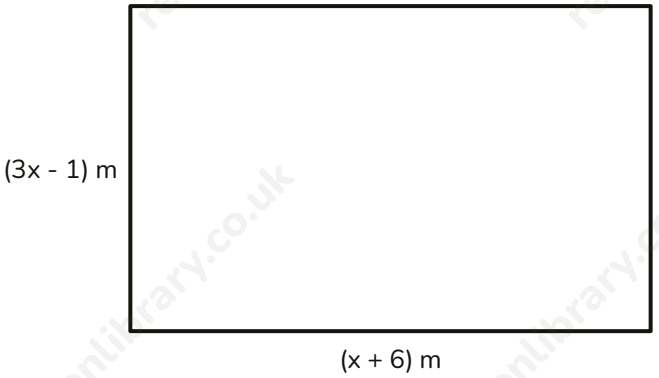
15 Expand and simplify: $(x - 1)^2$.

(1)

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16 A rectangle has length $(x + 6)$ m and width $(3x - 1)$ m. Expand and simplify an expression for its area, in m^2.

Diagram NOT accurately drawn



(3)

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17 Expand and simplify: $(x + 8)(x - 3)$.

(2)

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Mark scheme · 2.13 Expanding Double Brackets: Test Pack

Question 1

(a) $x^2 + 8x + 15$ cao	B1
(a) Answer: **$x^2 + 8x + 15$**	
(b) $2x^2 + 7x - 4$ cao	B1
(b) Answer: **$2x^2 + 7x - 4$**	
(c) $x^2 - 8x + 12$ cao	B1
(c) Answer: **$x^2 - 8x + 12$**	
(d) $3x^2 - 13x - 10$ cao	B1
(d) Answer: **$3x^2 - 13x - 10$**	

Question 2

recognise coefficient comes from 3x * 5x	M1
15 cao	A1
Answer: **15**	

Question 3

set up equation k + 4 = 10	M1
solve equation correctly	M1
6 cao	A1
Answer: **6**	

Question 4

each product expanded correctly or method shown	M1
like terms combined correctly	M1
$3x^2 - 6x - 14$ cao (does not factorise over the integers)	A1
Answer: **$3x^2 - 6x - 14$**	

Question 5

expands (x + 5)(x + 8) with at least three terms correct	M1
$x^2 + 5x + 8x + 40$ shown	M1
$x^2 + 13x + 40$ shown (with 5x + 8x = 13x)	A1
Answer: **$x^2 + 13x + 40$ (shown)**	

Question 6

first bracket expanded correctly	M1
second bracket expanded correctly (watch the signs)	M1
-x + 65 cao	A1
Answer: **-x + 65**	

Question 7

5(x + 1) = 5x + 5	M1
2(x + 1) = 2x + 2	M1
collects like terms to give 7x + 7	A1
Answer: **7x + 7 (shown)**	

Question 8

expands (t + 1)(t + 2) with at least three terms correct	M1
$t^2 + t + 2t + 2$ shown	M1
$t^2 + 3t + 2$ shown (with t + 2t = 3t)	A1
Answer: **$t^2 + 3t + 2$ (shown)**	

Question 9

method shown: (x + 6)(x + 6) or formula $a^2 + 2ab + b^2$ used	M1
first term squared and outer/inner terms identified	M1
middle term combined correctly	M1
$x^2 + 12x + 36$ cao	A1
Answer: **$x^2 + 12x + 36$**	

Question 10

at least three of the four products correct	M1
all four products correct	M1
$b^2 + 11b + 28$ cao	A1
Answer: **$b^2 + 11b + 28$**	

Question 11

at least three of the four products correct	M1
all four products correct	M1
$b^2 + 8b + 16$ cao	A1
Answer: **$b^2 + 8b + 16$**	

Question 12

expands (x + 5)(x + 5) with at least three terms correct	M1
$x^2 + 5x + 5x + 25$ shown	M1
$x^2 + 10x + 25$ shown (with 5x + 5x = 10x)	A1
Answer: **$x^2 + 10x + 25$ (shown)**	

Question 13

multiplication terms found correctly	M1
terms combined where appropriate	M1
$3x^2 - 7x - 6$ cao	A1
Answer: **$3x^2 - 7x - 6$**	

Question 14

8 cao	B1
Answer: **8**	

Question 15

$x^2 - 2x + 1$ cao	B1
Answer: **$x^2 - 2x + 1$**	

Question 16

sets up area as (x + 6)(3x - 1)	M1
expands correctly before collecting	M1
$3x^2 + 17x - 6$ cao	A1
Answer: **$3x^2 + 17x - 6$**	

Question 17

three or four correct terms before collecting	M1
$x^2 + 5x - 24$ cao	A1
Answer: **$x^2 + 5x - 24$**	

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