

## A30...Expanding Double Brackets

OCR

**(c)** Multiply out.

$$4(x - 5)$$

**(c)** ..... [1]

**(d)** Multiply out and simplify.

$$(2x + 5)(x - 3)$$

**(d)** ..... [2]

(c) Multiply out.

$$4(x - 5)$$

$$4x - 20$$

(c) ..... [1]

(d) Multiply out and simplify.

$$(2x + 5)(x - 3)$$

	$x$	$2x$	$+5$
$x$		$2x^2$	$+5x$
$-3$		$-6x$	$-15$

$$2x^2 - 1x - 15$$

(d) ..... [2]

**19 (a)** Use the formula  $s = ut + \frac{1}{2}at^2$  to find  $s$  when  $u = 2$ ,  $a = 10$  and  $t = 5$ .

**(a)** ..... [2]

**(b)** Expand and simplify.

$$(x + 7)(x - 3)$$

**(b)** ..... [2]

- 19 (a) Use the formula  $s = ut + \frac{1}{2}at^2$  to find  $s$  when  $u = 2$ ,  $a = 10$  and  $t = 5$ .

$$ut = 2 \times 5 = 10$$

$$\frac{1}{2}at^2 =$$

$$t^2 = 5^2 = 25$$

$$25 \times 10 = 250 \\ = 125$$

(a)  $10 + 125 = 135$  ..... [2]

- (b) Expand and simplify.

$$(x+7)(x-3)$$

$x$	$x$	$+7$
$x$	$x^2$	$+7x$
$-3$	$-3x$	$-21$

(b)  $x^2 + 4x - 21$  ..... [2]

**(b)** Multiply out and simplify.

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$$(3x + 2)(x - 4)$$

**(b)** ..... [2]

(b) Multiply out and simplify.

A30

$$(3x + 2)(x - 4)$$

$x$	$x$	$-4$
$3x$	$3x^2$	$-12x$
$2$	$+2x$	$-8$

(b)  $3x^2 - 10x - 8$  ..... [2]



15 (a) Multiply out.

**A30**       $(3x - 2y)(x + y)$

Give your answer in its simplest form.

(a) ..... [3]

15 (a) Multiply out.

A30  $(3x - 2y)(x + y)$

Give your answer in its simplest form.

$x$	$3x$	$-2y$
$x$	$3x^2$	$-2xy$
$y$	$+3xy$	$-2y^2$

(a)  $3x^2 + 1xy - 2y^2$  ..... [3]

Edexcel

- 23 Maryam is trying to expand and simplify  $(n - 2)^2$   
Here is her working.

$$\begin{aligned}(n - 2)^2 &= (n - 2)(n - 2) \\ &= n^2 - 2n - 2n - 4 \\ &= n^2 - 4n - 4\end{aligned}$$

Maryam's answer is wrong.

- (a) Find Maryam's mistake.

.....  
.....  
(1)

Josh is trying to factorise  $x^2 - 6x + 8$   
His reasoning is,

$$\begin{aligned}\text{because } 4 \times 2 &= 8 \\ \text{and } 4 + 2 &= 6\end{aligned}$$

$$\text{then } x^2 - 6x + 8 = (x + 4)(x + 2)$$

- (b) Explain what is wrong with Josh's reasoning.

.....  
.....  
.....  
(1)

Maryam is trying to expand and simplify  $(n-2)^2$   
Here is her working.

$$\begin{aligned}(n-2)^2 &= (n-2)(n-2) \\ &= n^2 - 2n - 2n - 4 \\ &= n^2 - 4n - 4\end{aligned}$$

$$\begin{aligned}-2x-2 \\ = +4\end{aligned}$$

Maryam's answer is wrong.

(a) Find Maryam's mistake.

$$-2x-2 = +4$$

$$\text{not } -4 \checkmark$$

(1)

Josh is trying to factorise  $x^2 - 6x + 8$   
His reasoning is,

$$\begin{aligned}\text{because } 4 \times 2 &= 8 \checkmark \\ \text{and } 4 + 2 &= 6\end{aligned}$$

$$\text{then } x^2 - 6x + 8 = (x+4)(x+2)$$

$$\begin{aligned}x^2 - 6x + 8 \\ (x-4)(x-2)\end{aligned}$$

(b) Explain what is wrong with Josh's reasoning.

The two factors need to add to  $-6$  not  $+6$   
factors used should be  $-4$  and  $-2 \checkmark$

(1)

27 (a) Factorise  $m^2 - 9$

A33

.....  
(1)

(b) Expand and simplify  $(x + 3)(2x - 5)$

A30

.....  
(2)

27 (a) Factorise  $m^2 - 9$ 

A33

$$(m+3)(m-3)$$


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(1)

(b) Expand and simplify  $(x+3)(2x-5)$ 

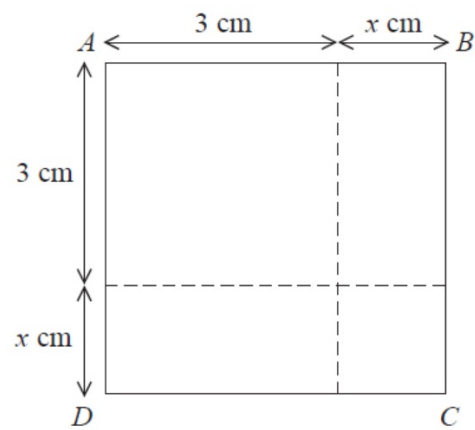
A30

x	x	+3
2x	2x <sup>2</sup>	+6x
-5	-5x	-15

$$2x^2 + 1x - 15$$


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(2)



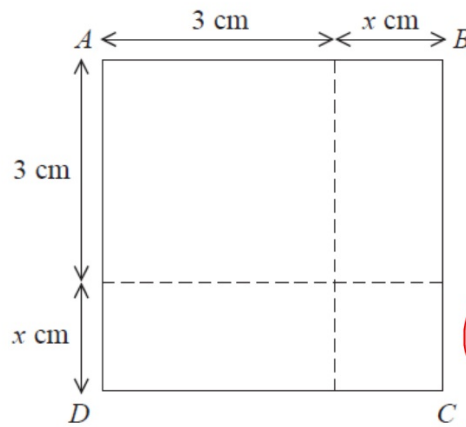
The area of square  $ABCD$  is  $10\text{ cm}^2$ .

Show that  $x^2 + 6x = 1$



	$x$	$+3$
$x$	$x^2$	$+3x$
$+3$	$+3x$	$+9$

$$x^2 + 6x + 9 \checkmark$$



$$(x+3) \times (x+3)$$

$$(x+3)(x+3) = 10$$

$$x^2 + 3x + 3x + 9 = 10$$

$$x^2 + 6x + 9 = 10$$

$$x^2 + 6x = 10 - 9$$

$$x^2 + 6x = 1 \checkmark$$

The area of square  $ABCD$  is  $10 \text{ cm}^2$ .

Show that  $x^2 + 6x = 1$

**24** (a) Solve  $2x^2 = 72$

Created by W Neill

.....  
(2)

(b) Expand and simplify  $(2x + 1)(3x - 2)$

.....  
(2)

24 (a) Solve  $2x^2 = 72$

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$$x^2 = \frac{72}{2}$$

$$x^2 = 36$$

$$\sqrt{36}$$

$$\begin{array}{r} +6 \\ -6 \\ \hline \end{array}$$

(2)

(b) Expand and simplify  $(2x + 1)(3x - 2)$

x	2x	+1
3x	6x <sup>2</sup>	+3x
-2	-4x	-2

$$6x^2 - 1x - 2$$

(2)

26 (a) Expand and simplify  $(5x + 2)(2x - 3)$

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26 (a) Expand and simplify  $(5x + 2)(2x - 3)$

A30

$x$	$5x$	$+ 2$
$2x$	$10x^2$	$+ 4x$
$-3$	$-15x$	$-6$

$$\begin{array}{r} 10x^2 - 11x - 6 \quad \checkmark^{(2)} \\ \hline 10x^2 + 4x - 15x - 6 \end{array}$$

15 (a) Factorise  $a^2 - b^2$

A33

.....  
(1)

(b) Hence, or otherwise, simplify fully  $(x^2 + 4)^2 - (x^2 - 2)^2$

A33

A30

.....  
(3)

15 (a) Factorise  $a^2 - b^2$

A33

$$8x^2 - 4x^2$$

+

$$(a+b)(a-b)$$

(1)

(b) Hence, or otherwise, simplify fully  $(x^2 + 4)^2 - (x^2 - 2)^2$

A33

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$$(x^2+4)(x^2+4)$$

$$(x^2-2)(x^2-2)$$

$$x^4 + 4x^2 + 4x^2 + 16$$

$$x^4 - 2x^2 - 2x^2 + 4$$

$$\left[ \cancel{x^4} + 8x^2 + 16 \right] - \left[ \cancel{x^4} - 4x^2 + 4 \right]$$

(3)

$$12x^2 + 12 \checkmark = 12(x^2 + 1) \checkmark$$

AQA



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

**[2 marks]**

A30

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Answer \_\_\_\_\_

28

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

[2 marks]

A30

$$(x-8)(x-8)$$

	$x$	$-8$
$x$	$x^2$	$-8x$
$-8$	$-8x$	$+64$

Answer  $x^2 - 16x + 64$  ✓

18 Expand and simplify  $(3x^2 + 2)(2x + 5) - 6x(x^2 - 3)$

[4 marks]

A10  
A30

Answer \_\_\_\_\_

18 Expand and simplify  $(3x^2 + 2)(2x + 5) - 6x(x^2 - 3)$

[4 marks]

A10  
A30

x	$3x^2$	+2
2x	$6x^3$	+4x
+5	$+15x^2$	+10

$$[6x^3 + 4x + 15x^2 + 10] - [6x^3 - 18x]$$

$$22x + 15x^2 + 10$$

Answer  $15x^2 + 22x + 10$  ✓

$$4x - -18x = 22x$$

$$6x(x^2 - 3)$$

20

Curve P has equation  $y = 2(x - 1)^2 - 5$

Curve Q is a reflection in the  $y$ -axis of curve P.

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Work out the equation of curve Q.

Give your answer in the form  $y = ax^2 + bx + c$  where  $a$ ,  $b$  and  $c$  are integers.

**[3 marks]**

Answer \_\_\_\_\_

20

A49

A30

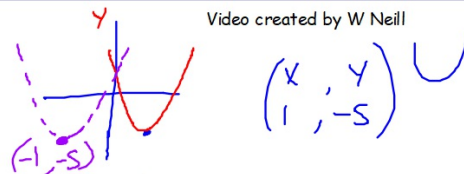
Curve P has equation  $y = 2(x - 1)^2 - 5$

Curve Q is a reflection in the  $y$ -axis of curve P.

Work out the equation of curve Q.

Give your answer in the form  $y = ax^2 + bx + c$  where  $a, b$  and  $c$  are integers.

Video created by W Neill



[3 marks]

$$y = 2(-x - 1)^2 - 5$$

$$y = 2(x^2 + 2x + 1) - 5$$

$$y = 2x^2 + 4x + 2 - 5$$

$$y = 2x^2 + 4x - 3$$

$$(-x - 1)(-x - 1)$$

	$-x$	$-1$	
$-x$	$x^2$	$+1x$	
$-1$	$+1x$	$+1$	

$x^2 + 2x + 1$

Answer  $y = 2x^2 + 4x - 3$  ✓