

Expanding double brackets

Starter

1. **(Review of last lesson)** Expand and simplify:

(a) $9(7x - 4) + 8(5x + 6)$ (b) $3(2n - 11) - 6(4n - 7)$

Working: (a) $9(7x - 4) + 8(5x + 6) = 63x - 36 + 40x + 48$
 $= 103x + 12$

(b) $3(2n - 11) - 6(4n - 7) = 6n - 33 - 24n + 42$
 $= 9 - 18n$

2. **(Review of previous material)**

Expand and simplify: (a) $(x + 2)(x + 3)$ (b) $(x + 5)(x - 8)$

Working: (a) $(x + 2)(x + 3) = x^2 + 3x + 2x + 6 = x^2 + 5x + 6$

(b) $(x + 5)(x - 8) = x^2 - 8x + 5x - 40 = x^2 - 3x - 40$

E.g. 1 Expand and simplify:

(a) $(x - 6)(x + 2)$ (b) $(x - 7)(x - 1)$
(c) $(3x + 5)(x + 7)$ (d) $(4x + 9)(3x - 8)$

Working: (a) $(x - 6)(x + 2) = x^2 + 2x - 6x - 12$
 $= x^2 - 4x - 12$

(b) $(x - 7)(x - 1) = x^2 - x - 7x + 7$
 $= x^2 - 8x + 7$

(c) $(3x + 5)(x + 7) = 3x^2 + 21x + 5x + 35$
 $= 3x^2 + 26x + 35$

(d) $(4x + 9)(3x - 8) = 12x^2 - 32x + 27x - 72$
 $= 12x^2 - 5x - 72$

E.g. 2 Expand and simplify:

(a) $3(x - 4)(x + 3)$ (b) $5(2x - 7)(x - 8)$

Working: (a) $3(x - 4)(x + 3) = 3(x^2 + 3x - 4x - 12)$ *expand using FOIL*
 $= 3(x^2 - x - 12)$ *simplify FOIL terms*
 $= 3x^2 - 3x - 36$ *multiply by number outside*

(b) $5(2x - 7)(x - 8) = 5(2x^2 - 16x - 7x + 56)$
 $= 5(2x^2 - 23x + 56)$
 $= 10x^2 - 115x + 280$

Squaring brackets

- E.g. 3** (a) Given that 4^2 is 4×4 , expand and simplify these brackets:
(i) $(x + 3)^2$ (ii) $(x + 5)^2$
(b) Looking at your answers, is there a quick way to square brackets?

Working:

(a) (i) $(x + 3)^2 = (x + 3)(x + 3)$
 $= x^2 + 3x + 3x + 9$
 $= x^2 + 6x + 9$

(ii) $(x + 5)^2 = (x + 5)(x + 5)$
 $= x^2 + 5x + 5x + 10$
 $= x^2 + 10x + 25$

- (b) The coefficient of x is twice the product of the terms in the bracket.
The constant term is the square of the final term.

- E.g. 4** Expand and simplify: (a) $(x + 6)^2$ (b) $(x - 8)^2$ (c) $(4x - 7)^2$

Working:

(a) $(x + 6)^2 = x^2 + 12x + 36$

(b) $(x - 8)^2 = x^2 - 16x + 64$

(c) $(4x - 7)^2 = 16x^2 - 56x + 49$

Video: [Expanding double brackets](#)

[Solutions to Starter and E.g.s](#)

Exercise

9-1 class textbook: p103 M4.5 Qu 1-43 odd, 45-48
A*-G class textbook: p95 M4.5 Qu 1-48 odd or even
9-1 homework book: p36 M4.5 Qu 1-24
A*-G homework book: p27 M4.5 Qu 1-22