



### Squaring brackets

**E.g. 3** (a) Given that  $4^2$  is  $4 \times 4$ , 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)  $(x + 3)^2 = (x + 3)(x + 3)$   
 $= x^2 + 3x + 3x + 9$   
 $= x^2 + 6x + 9$

### Poetry for squaring brackets

The quick way to square brackets such as  $(3x - 5)^2$  is:

First term squared,  $(3x)^2 = 9x^2$  the 3 and the x are squared  
Twice their product,  $2 \times 3x \times (-5) = -30x$   
Last term squared.  $(-5)^2 = 25$

So  $(3x - 5)^2 = 9x^2 - 30x + 25$ .

**N.B.** A negative number squared becomes positive e.g.  $(-2)^2 = -2 \times -2 = 4$ .

If you find it difficult to use the poetry, write out the two brackets in full and use FOIL.

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

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

**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

### Summary

The mnemonic **FOIL** is often used when expanding double brackets.

**First** = multiply the **first** terms in each bracket  
**Outside** = multiply the **outside** terms in each bracket  
**Inside** = multiply the **inside** terms in each bracket  
**Last** = multiply the **last** terms in each bracket

Poetry for squaring brackets:

First term squared, twice their product, last term squared.