Craigieburn Secondary College

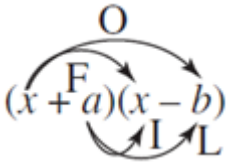
Conventions #1

AusVELS 9.0 Students will be able to apply the distributive law to the expansion of algebraic expressions, including binomials, and collect like terms where appropriate.

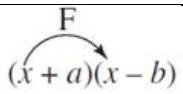
Expanding single brackets To expand brackets in an algebraic expression, multiply the term outside the brackets by each of the terms inside.	***3(x + 4y)*** ***= 3 × x + 3 × 4y*** ***= 3x + 12y***
Simplify by collecting like terms Expand the brackets and then add or subtract like terms	***4(x + 5y) + 7(2x – y)*** ***= 4(x) + 4(5y) + 7(2x) + 7(–y)*** ***= 4x + 20y + 14x – 7y*** **Take the like terms, x with x and y with y** ***= (4x + 14x) + (20y – 7y)*** ***= 18x + 13y***

Expanding Pairs of Binomials

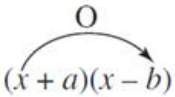
Using FOIL



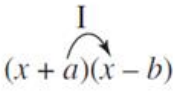
First: multiply the **first** terms in each bracket together



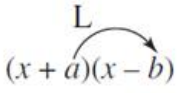
Outer: multiply the two **outer** terms



Inner: multiply the two **inner** terms



Last: multiply the **last** terms in each bracket together



Using FOIL to expand (y + 2)(y – 4)

(y + 2)(y – 4) = (y x y) + (y x -4) + (2 x y) + (2 x -4)
= y^2 -4y + 2y -8
= y^2 - 2y -8

Craigieburn Secondary College

Conventions #1

Expanding Perfect Squares Using FOIL	$(a+b)^2$ $=(a+b)(a+b)$ $=a^2+ab+ab+b^2$ $=a^2+2ab+b^2$
Using a shorter method • square the first term • multiply the two terms together and double • square the last term.	Example: $(y+3)^2=(y)^2+(2 \times y \times 3)+(3)^2$ $=y^2+6y+3^2$ **Similarly $(a-b)^2=a^2-2ab+b^2$** $(w-4)^2=(w)^2+(2 \times w \times -4)+(-4)^2$ $=w^2-8w+16$
Expanding Difference of Two Squares Use FOIL	$(a+b)(a-b)$ $=a^2-ab+ab-b^2$ $=a^2-b^2$
Recognise that the expansion of (a+b)(a-b) produces a difference of two squares a^2 and b^2	Example: $(y+3)(y-3)=(y)^2-(3)^2$ $=y^2-9$

Craigieburn Secondary College

Conventions #1