Standard Form of Quadratics

- The form that we have seen in quadratics so far has always looked something like $y = 2x^2 + 6x - 1$.

- But expressions that contain two x's that can be multiplied together, i.e. $y = 2x(x+3)$ or $y = (x-3)(x+5)$, are also parabolas. We just need to expand the brackets to turn it into the standard form.

Ex/ Expand and simplify.

a) $3x(2x+1)+4(2x+1)$

$= 6x^2 + 3x + 8x + 4$

$= 6x^2 + 11x + 4$

b) $5x(x-4)-3(x-4)$

multiply

$= 5x^2 - 20x - 3x + 12$

$= 5x^2 - 23x + 12$

- When there are two brackets, each of which has two terms in it, we need to multiply all the terms in the first bracket by all the terms in the second bracket.

- There are 2 methods we can use:

1) FOIL

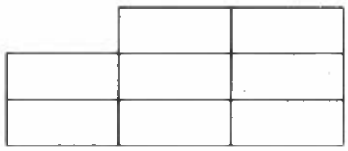
F - First term in each bracket

O - Outside terms of the brackets

I - Inside terms of the brackets

L - Last term in each bracket

2) The box method



Ex/ Expand

a) $(x+1)(x-4)$

$= x^2 - 4x + 1x - 4$

$= x^2 - 3x - 4$

OR

Each part of bracket

	x	1
x	x^2	1x
-4	-4x	-4

other bracket

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

$= x^2 - 2x + 5x - 10$

$= x^2 + 3x - 10$

	x	5
x		
-2		

c) $(3x-5)(4x+1)$

$= 12x^2 + 3x - 20x - 5$

$= 12x^2 - 17x - 5$

d) $(x-1)(2x-3)$

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

$= 2x^2 - 5x + 3$

e) $(2x+5)(3x-7)$

$= 6x^2 - 14x + 15x - 35$

$= 6x^2 + 1x - 35$

f) $(x+2)^2$ Write it twice

$= (x+2)(x+2)$

$= x^2 + 2x + 2x + 4$

$= x^2 + 4x + 4$

g) $3(3x-1)(x+4)$

Ignore the 3 until after brackets then multiply it all by 3

$= 3(3x^2 + 12x - 1x - 4)$

$= 3(3x^2 + 11x - 4)$

$= 9x^2 + 33x - 12$

h) $-2(2x-1)(x-5)$

$= -2(2x^2 - 10x - 1x + 5)$

$= -2(2x^2 - 11x + 5)$

$= -4x^2 + 22x - 10$

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

$= 4(x+2)(x+2)$

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

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

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

Practice: Handout - Standard Form