

**FACTORISING QUADRATICS**

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For quadratics expressions of the form

$$ax^2 \pm bx \pm c$$

where $a > 1$ and both b and c are not multiples of a , factorising puts the expression into the form

$$(mx \pm e)(nx \pm f)$$

Consider the expansion pattern, we can see that

$$\left. \begin{array}{l} mn = a \\ mf + en = b \\ ef = c \end{array} \right\} \begin{array}{l} \text{Aim is to find factor pairs of } a \text{ and } c \\ \text{that meet the middle relationship} \end{array}$$

For example,

$$42x^2 + 53x + 15$$

Step One: List factor pairs of 15:

1	15
3	5

List factor pairs of 42:

1	42
2	21
3	14
6	7

Step Two: find product pairs that sum to 53:

3	5
<u>x6</u>	<u>x7</u>
18 +	35 = 53,

Step Three: Set up brackets, and fill backwards

$$\begin{array}{l} (\quad) (\quad) \\ (\quad 3) (\quad 5) \\ (x + 3) (x + 5) \\ \underline{(7x + 3) (6x + 5)} \end{array}$$

each pair of factors must be split into different bracket pairs, eg 3 & 5 in different brackets, 3 & 6 in different brackets