

3.7 B Factor Trinomials of the Form $x^2 + bx + c$ Algebraically

Factoring

- The opposite of "expand & simplify"
- Rewrite an expression as a **product** of 2 or more things

Factoring Warm-up:

Multiply	Add	Numbers
2	3	1, 2
18	9	3, 6
6	5	2, 3
15	8	3, 5
100	20	10, 10
16	-10	-8, -2
36	-12	-6, -6
60	-16	-6, -10
144	-24	-12, -12
42	-13	-6, -7
56	-15	-7, -8
-12	-11	-12, 1
-30	-1	5, -6
-10	3	-2, 5
-24	5	-3, 8
-30	1	6, -5

To factor we will be breaking down the middle term.
 We can do this by finding two **numbers**
 that **Multiply to the outside #**
 and **ADD (Collect) to the centre #**

Ex 3: Factor the following:

a) $y = x^2 + 5x + 6$

$y = (x + 2)(x + 3)$

M 6
 A 5
 N 2, 3

$\frac{6}{1, 6}$
 2, 3

b) $y = x^2 + 3x + 2$

$y = (x + 2)(x + 1)$

M 2
 A 3
 N 2, 1

What about a negatives ?

c) $y = x^2 + 8x - 9$	M	-9
$y = (x - 1)(x + 9)$	A	8
	N	-1, 9

d) $x^2 - 4x - 5$	M	-5
$y = (x - 5)(x + 1)$	A	-4
	N	-5, 1

e) $x^2 - 9x + 18$	M	18
$y = (x - 6)(x - 3)$	A	-9
	N	-6, -3

And a few tricky ones...

f) $y = x^2 - 9$	M	-9
$y = (x - 3)(x + 3)$	A	0
	N	-3, 3

When there are two terms that are both perfect squares and a MINUS in the middle it is called a Difference of Squares

$$\begin{array}{r} 9 \\ \hline -1, 9 \\ -3, 3 \end{array}$$

g) $y = x^2 + 7x$	M	0
$y = (x + 0)(x + 7)$	A	7
$y = x(x + 7)$	N	7, 0