MPM 2D

FACTORING SIMPLE TRINOMIALS $x^2 + bx + c$

Consider the expanding and simplifying of each expression:

①	$(x+3)(x+4)$	②	$(n+6)(n-3)$	③	$(y-4)^2$
	$= x^2 + 4x + 3x + (3)(4)$		$= n^2 - 3n + 6n - 18$		
	$= x^2 + 7x + 12$		$= n^2 + 3n - 18$		

The key to reversing the process, that is to factor the simple trinomial into its 2 binomial factors, lies with the highlighted values. In ①, the last term (the constant term; the "y –intercept") was determined by ***MULTIPLYING*** the last terms of each binomial. In other words, the "+12" was obtained from multiplying "+3" by "+4". The same two numbers were used to obtain the coefficient of the second term, or linear term, by ***ADDING*** the coefficients of the like terms.

$$\left.\begin{array}{l} \underline{3} \times \underline{4} = 12 \\ \underline{3} + \underline{4} = 7 \end{array}\right\} \qquad x^2 + 7x + 12 = (x + \underline{3})(x + \underline{4})$$

The x^2 term is divided into 2 $x's$ and the factors of 12 (+3 and +4) were connected to each x-factor!

EXERCISE: Factor each of the following trinomials.

1. $x^2 + 8x + 15$
2. $x^2 - 8x - 20$
3. $k^2 + k - 30$
4. $n^2 - 11n + 28$
5. $x^2 - 12x + 36$
6. $m^2 + 10m - 24$
7. $-2x^3 + 42x^2 - 160x$
8. $w^2 + 5wk - 6k^2$
9. $4at^2 + 32at + 64a$
10. $-6x^2 + 78xy - 72y^2$