Perfect Square Trinomials

What is $(x+5)(x+5)$? $x^2+5x+5x+25 = x^2+10x+25$

What would $(a+b)(a+b)$ equal? $a^2+ab+ab+b^2 = a^2+2ab+b^2$

Can you guess what two factors formed: $x^2+12x+36$?

What is $(x-7)(x-7)$? $x^2-7x-7x+49 = x^2-14x+49$

What would $(a-b)(a-b)$ equal? $a^2-ab-ab+b^2 = a^2-2ab+b^2$

Can you guess what two factors formed: $x^2-20x+100$?

Factoring Perfect Square Trinomials

$a^2+2ab+b^2 = (a+b)^2$ and $a^2-2ab+b^2 = (a-b)^2$

Necessary Conditions for Factoring a Perfect Square Trinomial

1. The first term must have a positive coefficient and be a perfect square, a^2.
2. The last term must have a positive coefficient and be a perfect square, b^2.
3. The middle term must be twice the product of the bases of the first and last terms, 2ab or –2ab.

The same strategy applies for any perfect square trinomial.

$4x^2+20xy+25y^2 = (2x+5y)^2$

$16x^2-24x+9 = (4x-3)^2$

TRY:

$x^2+16x+64$ $x^2-18x+81$ $9x^2-30x+25$