Algebra 1: 12.5 Notes & Practice **Name** _____ **Period** _____

Special Products – Perfect Square Trinomials

Main Ideas/Questions	Notes/Examples
WARM UP Do you see a pattern?	**Directions:** Simplify the following polynomials. • $(x-6)(x+6) = x^2+6x-6x-36 = x^2-36$ ← Difference of Squares • $(k-11)(k-11) = k^2-11k-11k+121 = k^2-22k+121$ • $(3d+7)(3d+7) = 9d^2+21d+21d+49 = 9d^2+42d+49$ ← Perfect Square Trinomials

Steps to Factor a Perfect Square Trinomial The 1st and last terms are perfect squares.		
	1.	Make sure you have a perfect square trinomial! You can take the square root of the first and last terms. The middle term is twice the product of the square root of the first and last terms.
	2.	Use the following rules to factor: $a^2+2ab+b^2 = (a+b)(a+b) = (a+b)^2$ $a^2-2ab+b^2 = (a-b)(a-b) = (a-b)^2$
	3.	Check your work by distributing!

EXAMPLES

Directions: Factor each perfect square trinomial. Check your work by distributing. If a polynomial cannot be factored, write "prime".

1. $x^2+10x+25$ $(x+5)^2$	2. $s^2-8s+16$ $(s-4)^2$
3. $p^2+8p+64$ *prime*	4. $n^2-16n+64$ $(n-8)^2$
5. $m^2+24m+144$ $(m+12)^2$	6. $169-26r+r^2$ $(13-r)^2$
7. $9g^2+12g+4$ $(3g+2)^2$	8. $7x^2-9x+2$ *prime*
9. $16t^2+48t+36$ $(4t+6)^2$	10. $4z^2-36z+81$ $(2z-9)^2$
11. $2u^2+12u+18$ $2(u+3)^2$	12. $16d^2-40de+25e^2$ $(4d-5e)^2$