

FACTORING TRINOMIALS

$$x^2 + bx + c$$

To factor a trinomial of the form above, you must find two integers that MULTIPLY TO C, AND ADD UP TO B.

Examples: Factor the following trinomials. Check your answers by FOIL.	
1. $x^2 + 7x + 12 \rightarrow 3 \cdot 4 \quad 3+4$ $(x+3)(x+4)$	2. $n^2 + 9n + 20$ $(n+5)(n+4)$
3. $h^2 + 9h + 18$ $(h+3)(h+6)$	4. $a^2 + 10a + 24$ $(a+6)(a+4)$
5. $k^2 + 6k + 5$ $(k+5)(k+1)$	6. $y^2 + 2y + 1$ $(y+1)(y+1)$
7. $n^2 + 3n - 18$ $(n+6)(n-3)$	8. $x^2 + 2x - 8$ $(x+4)(x-2)$
9. $g^2 + 3g - 10$ $(g+5)(g-2)$	10. $s^2 + 3s - 54$ $(s+9)(s-6)$
11. $c^2 + 4c - 45$ $(c+9)(c-5)$	12. $n^2 + 3n - 28$ $(n+7)(n-4)$
13. $x^2 + 7x - 30$ $(x+10)(x-3)$	14. $a^2 + 5a - 6$ $(a+6)(a-1)$
15. $b^2 - 2b - 63$ $(b-9)(b+7)$	16. $a^2 - 2a - 3$ $(a-3)(a+1)$
17. $k^2 - 12k - 64$ $(k+4)(k-16)$	18. $x^2 - 14x - 72$ $(x-18)(x+4)$

19. $c^2 - 26c - 56$ $(c-28)(c+2)$	20. $y^2 - 5y - 84$ $(y+7)(y-12)$
21. $x^2 - 11x + 24$ $(x-8)(x-3)$	22. $x^2 - 14x + 49$ $(x-7)(x-7)$
23. $y^2 - 17y + 72$ $(y-9)(y-8)$	24. $m^2 - 15m + 50$ $(m-5)(m-10)$
25. $g^2 - 16g + 48$ $(g-12)(g-4)$	26. $c^2 - 3c + 2$ $(c-2)(c-1)$
27. $x^2 + 13xy + 42y^2$ $(x+6y)(x+7y)$	28. $a^2 - 4ab - 45b^2$ $(a-9b)(a+5b)$
29. $m^2 + 2mn - 24n^2$ $(m+6n)(m-4n)$	30. $x^2 + 8xy - 20y^2$ $(x+10y)(x-2y)$

Multi-Step Factoring: Look for a GCF first, then factor the trinomial.

31. $4n^2 + 12n + 8$ $4(n^2 + 3n + 2)$ $4(n+2)(n+1)$	32. $2x^2 - 8x - 24$ $2(x^2 - 4x - 12)$ $2(x-6)(x+2)$
33. $3y^2 - 15y + 12$ $3(y^2 - 5y + 4)$ $3(y-4)(y-1)$	34. $3a^3 + 30a^2 + 63a$ $3a$ $3a(a^2 + 10a + 21)$ $3a(a+7)(a+3)$
35. $2b^2 + 10b + 12$ $2(b^2 + 5b + 6)$ $2(b+3)(b+2)$	36. $5x^2 - 15x - 140$ $5(x^2 - 3x - 28)$ $5(x-7)(x+4)$