Name: _____ Date: _____

Factoring Trinomials Completely
Algebra 1

In the previous lesson, we saw how to factor a trinomial of the form x^2+bx+c by employing the guess-and-check method. In each of those cases, the coefficient of the quadratic (x^2) term was always one, and thus not written. It is also possible to factor trinomials of the form ax^2+bx+c where the coefficient a is a number other than 1 by combining two factoring methods into the same problem.

***Exercise* #1:** Consider the trinomial $3x^2+15x+18$.

(a) What is the GCF of each term in the trinomial?

(b) Write the trinomial as a product involving its GCF.

(c) How does the trinomial inside of the parentheses now factor?

(d) Write $3x^2+15x+18$ in its completely factored form.

We can carry this two-step process out for all trinomials whose three monomial terms have a GCF other than one. In this course, after factoring a GCF out of the trinomial, the quadratic coefficient on the new trinomial will be one.

***Exercise* #2:** Factor each of the following trinomials completely. Remember to mentally check your factors by multiplying.

(a) $2y^2-12y+16$

(b) x^3-4x^2-12x

(c) $5x^2-45x+90$

(d) $9x^2+18x+9$

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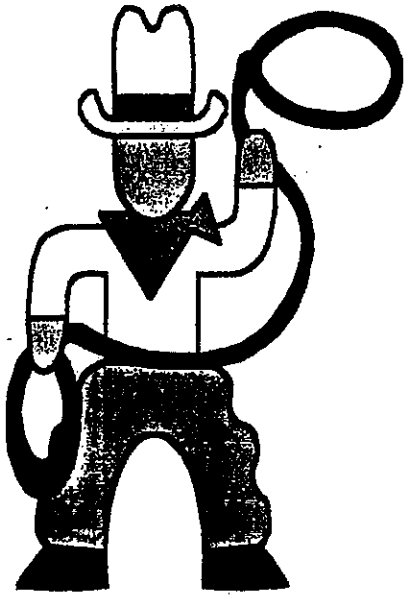
Factoring Completely

Note: Factoring completely generally implies that you must factor more than once. Always check for a **Greatest Common Factor (G.C. F.)** before using either of the other two methods.

Factor the following completely:

1) $2a^2 - 2b^2 =$ _____



2) $y^4 - 81 =$ _____

3) $x^3 + 7x^2 + 10x =$ _____

4) $st^2 - s =$ _____

5) $by^2 - 4b =$

6) $3x^2 - 6x - 24 =$

7) $x^4 - 16$

8) $2x^2 - 50$

9) $6x^4 - 6x^2 - 36$

10) $3x^4 - 243$

11) $6x^3 - 11x^2 - 10x$

12) $8a^3 - 14a^2b - 15ab^2$