NAME _____ DATE _____ PERIOD ____

9-4 Study Guide and Intervention *(continued)*

Factoring Trinomials: $ax^2 + bx + c$

Solve Equations by Factoring Factoring and the Zero Product Property can be used to solve some equations of the form $ax^2 + bx + c = 0$.

Example **Solve $12x^2 + 3x = 2 - 2x$. Check your solutions.**

$12x^2 + 3x = 2 - 2x$	Original equation
$12x^2 + 5x - 2 = 0$	Rewrite equation so that one side equals 0.
$(3x + 2)(4x - 1) = 0$	Factor the left side.
$3x + 2 = 0$ or $4x - 1 = 0$	Zero Product Property
$x = -\frac{2}{3}$ $\quad$ $x = \frac{1}{4}$	Solve each equation.

EXAMPLE OF FACTORING CONTINUED BELOW

The solution set is $\left\{-\frac{2}{3}, \frac{1}{4}\right\}$.

Since $12\left(-\frac{2}{3}\right)^2 + 3\left(-\frac{2}{3}\right) = 2 - 2\left(-\frac{2}{3}\right)$ and $12\left(\frac{1}{4}\right)^2 + 3\left(\frac{1}{4}\right) = 2 - 2\left(\frac{1}{4}\right)$, the solutions check.

Exercises TIP! Put in proper form before trying to factor! Follow GRE. -- Mr. C.

Solve each equation.

1. $8x^2 + 2x - 3 = 0$
2. $3n^2 - 2n - 5 = 0$
3. $2d^2 - 13d - 7 = 0$
4. $4x^2 = x + 3$
5. $3x^2 - 13x = 10$
6. $6x^2 - 11x - 10 = 0$
7. $2k^2 - 40 = -11k$
8. $2p^2 = -21p - 40$
9. $-7 - 18x + 9x^2 = 0$
10. $12x^2 - 15 = -8x$
11. $7a^2 = -65a - 18$
12. $16y^2 - 2y - 3 = 0$
13. $8x^2 + 5x = 3 + 7x$
14. $4a^2 - 18a + 5 = 15$
15. $3b^2 - 18b = 10b - 49$

FACTORING EXAMPLE CONTINUED HERE

$12x^2 + 5x - 2$

sum = 5

prod = $12 \cdot -2 = -24$

$-3 \cdot +8$

$(12x^2 - 3x) + (8x - 2)$

$3x(4x - 1) + 2(4x - 1)$

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$(4x - 1)(3x + 2)$ ✓

LOOK

Note: the order in which you multiply these groups does not matter.