9-2 Factoring using Distributive Property

- Factor polynomials using Distributive Property
- Solve quadratic equations of the form $ax^2 + bx = 0$

* See p. 481 Baseball Problem

Distributive Property

$2a(6a + 8) = 2a(6a) + 2a(8)$
$= 12a^2 + 16a$

Reverse Distibutive Property

$12a^2 + 16 =$

Factoring a polynomial means to find its *COMPLETELY* factored form.

Ex 1) Use the Distributive Property to factor each polynomial .

a) $15x + 25x^2 =$

Divide by GCF!

b) $12xy + 24xy^2 + 30x^2y^2 =$

Factor by Grouping- used to factor some polynomials having four or more terms. Pairs of terms are groupeed together and factored. The *Distributive Property* is then applied asecond time to factor a *common binomial.*

Ex) Factor
2xy + 7x - 2y - 7

4ab + 8b + 3a + 6

Additive Inverses- recognizing binomials that are additive inverses is helpful when factoring. For example: (7 - y) and (y - 7) are additive inverses.

Rewrite (7 - y) as -1(y - 7)

Ex) Factor
35x - 5xy +3y - 21

15a - 3ab + 4b - 20

Factor by Grouping
- Four or more terms
- Terms with common factors can be grouped
- The two common factos are identical or are additve inverses of each other.

ax + bx + ay + by = x(a+b)+y(a+b)
= (a+b)(x+y)

Solve Equations by Factoring

6(0)= 0(-3)= (5-5)(0)= -2(-3+3)=

Zero Product Property

- **If the product of two factors is 0, then at least one of the factors is 0!!!!**
- **For any real numbers *a* and *b*, if *ab* = 0, then *a* = 0, *b* = 0 or both *a* and *b* equal 0.**

Ex) Solve :
$(x - 2)(4x - 1) = 0$

$(x - 5)(3x + 4) = 0$

Rewrite equations so that one side equals 0!

Ex) Solve:
$4y = 12y^2$

$x = 7x^2$