More Factoring

Another method of factoring is to look at the coefficients in the polynomial and to make an educated guess at what it might look like in factored form. Then, check your guess and see if it's right.

If we have some factored polynomial that looks like:

$$(x-a)(x-b)$$

We can expand it to get:

$$x^2 - ax - bx + ab$$

$$= x^2 - (a+b)x + ab$$

So, the coefficient of x is just the **negative** of the sum of a and b. And the constant term (the term with **no** x's beside it) is just the product of a and b.

Follow through this example to see what I mean:

Factor: $x^2 - 11x + 28$

We need to find two numbers that multiply to get 28 and add to get 11.

The factors of 28 are $1, 2, 4, 7, 14, 28$. We notice that 7 and 4 add to get 11 and multiply to get 28.

So,

$$x^2 - 11x + 28$$

$$= (x-4)(x-7)$$

We have now factored the polynomial. If you want to check your answer, you can multiply out the factored version.

Try these questions on your own.

1. $x^2 + 5x + 4$
2. $x^2 - 6x + 5$
3. $x^2 - 5x + 6$
4. $x^2 - 2x - 24$
5. $x^2 + 12x + 32$
6. $x^2 - 2x - 15$
7. $y^4 + 3y^2 + 2$
8. $x^2 + 3x - 18$
9. $z^2 + 9z + 20$
10. $k^2 - 6k - 27$