

## ac Method of Factoring

Consider a polynomial expression of the form:

$$ax^2 + bx + c \text{ or } ax^2 + bxy + cy^2$$

The polynomial can be factored if there are two factors of  $ac$  whose sum is  $b$ .

There are two main situations.

One where the constant,  $c$ , is positive,  $ax^2 + bx + c$  and  
one when the constant,  $c$ , is negative  $ax^2 + bx - c$ .

**When the constant is positive ...**

The polynomial can be factored only if there are two factors of  $ac$  which add to be the absolute value of  $b$ .

**When the constant is negative ...**

The polynomial can be factored only if there are two factors of  $ac$  which have a difference of the absolute value of  $b$ .

We will ignore the sign of the middle number so that we don't have to keep saying the absolute value of  $b$  ... until the very end.

Then the FIRST question you have to answer is:

Are there two factors of \_\_\_\_\_ ( $ac$ ) whose \_\_\_\_\_ ("sum" or "difference" depending on  $d$ ) is \_\_\_\_\_ ( $b$  without the sign)?

If your answer is yes - then the polynomial can be factored and the two factors you found which worked in answering the question will also work in the factoring.