ac Method of Factoring

Consider a polynomial expression of the form:

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

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.