Strategies for Factoring Quadratics in the Form $ax^2 + bx + c$

a=1?

Yes

No

Can you factor out a?

No

Yes

BASIC

Step 1: Find your magic numbers

Sum (adds to b):

Product (multiplies to ac):

Step 2: Input magic numbers into parenthesis

Hint: It should look like this:

$(x \quad)(x \quad)$

GCF

Step 1: Find GCF (greatest common factor).

Hint: Use factor trees if necessary

Step 2: Put GCF on the outside of the parenthesis

Hint: It should look like this:

GCF( )

Step 3: Put the remaining factors in parenthesis

Note: If the coefficient of x^2 is not 1 after factoring out the GCF, stop and switch to Grouping.

Step 4: Find your magic numbers

Sum (adds to b):

Product (multiplies to ac):

Step 5: Input magic numbers into parenthesis

Hint: It should look like this:

GCF$(x \quad)(x \quad)$

GROUPING

Step 1: Find your magic numbers

Sum (adds to b):

Product (multiplies to ac):

Step 2: Rewrite the middle term

Hint: It should look like this:

$ax^2 + \_\_x + \_\_x + c$

Step 3: Split the expression into 2 groups:

Hint: It should look like this:

$ax^2 + \_\_x \mid + \_\_x + c$

Step 4: Factor out the GCF from each group:

Hint: It should look like this:

$GCF1(\_\_x + \_\_) + GCF2(\_\_x + \_\_)$

Step 5: Rewrite as a product of the matched parentheses and the leftover terms.

Hint: It should look like this:

$(\_\_x + \_\_)(GCF1 + GCF2)$

Are you being asked to factor?
OR
Find the zeros/solutions/solve for x?

Factor

Congrats, you're done!

Step 1: Set each factor equal to 0 and solve for x
Step 2: Congrats, you're done!