Name_____

# Factoring Steps toolkit for $ax^2 + bx + c$

## Step One- Check for GCF

If a > 1 Check a, b, and c for a greatest common factor. If there is one FACTOR IT OUT! Warning! This doesn't mean you're done! Next, see if you can do step two OR step three.

If there is no GCF -go on to step 2

## Step two-Check for Special cases

If a and c are both perfect square numbers and b is $2\sqrt{a}\sqrt{c}$ FACTOR IT AS A PERFECT SQUARE. Congratulations, now you are done.

If a and c are perfect squares being subtracted with no middle term FACTOR IT AS DIFFERENCE OF SQUARES. Congratulations, now you are probably done. (Sometimes we can get really tricky and hide another difference of squares like the example below-but we hardly ever do this :

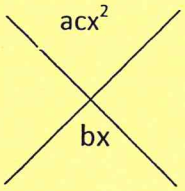
$$x^4 - 81 = (x^2 + 9)(x^2 - 9) = (x^2 + 9)(x + 3)(x - 3)$$

If you decide that the quadratic is NOT a special case-go on to step three

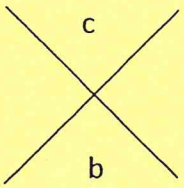
## Step three-Try regular factoring-you must show work!!!!

If a > 1 set up a generic rectangle AND a diamond problem

| | c |
|---|---|
| $ax^2$ | |




If a = 1 set up a diamond problem




## Step four-declaring prime

**ONLY** after **EVERY** attempt at steps 1, 2, and 3 have met a dead end, are you allowed to give up and declare a quadratic "prime"

# Quadratics: $ax^2+bx+c$ Factoring flowchart