6-5 Factoring $ax^2 + bx + c$

Things to remember:

Start	End
$ax^2 + bx + c$	$(\_x + \_)(\_x + \_)$
$ax^2 - bx + c$	$(\_x - \_)(\_x - \_)$
$ax^2 + bx - c$	$(\_x + \_)(\_x - \_)$
$ax^2 - bx - c$	$(\_x + \_)(\_x - \_)$

Steps:

1.) Factor out GCF if possible

2.) Find the factors of a and put those values in the 1st blanks.

3.) Find the factors of c and put those values in the last blanks.

4.) Multiply the outside and inside and add to get b.

5.) If you don't get b, try again.

Factor.

$a=21 \quad b=13 \quad c=2$

$21x^2 + 13x + 2$

$(3x+2)(7x+1)$

$3x+14x=17x$

No

$(3x+1)(7x+2)$

$6x+7x=13x$

$a=8 \quad b=14 \quad c=3$

$8x^2 + 14x + 3$

$(2x+1)(4x+3)$

$6x+4x=10x$

No

$(4x+1)(2x+3)$

$12x+2x=14x$

Factor.

$a=18 \quad b=36 \quad c=14$

$\frac{18x^2}{2} + \frac{36x}{2} - \frac{14}{2}$ GCF: 2

$a=9 \quad b=18 \quad c=7$

$2(9x^2+18x-7)$

$2(3x+7)(3x-1)$

$-3x+21x=18x$

$\frac{9}{1\times9}$ $\frac{7}{1\times7}$

3×3

Factor.

$a=4\ b=2\ c=6$

$\frac{4a^2 + 2a - 6}{2}$ GCF: 2

$\frac{}{2}\ \frac{}{2}$

$a=2\ b=1\ c=3$

$2(2a^2 + 1a - 3)$ $\frac{2}{1\times2}$ $\frac{3}{1\times3}$

$2(1a+3)(2a-1)$

$-1a+6a=5a$

$2(2a+3)(1a-1)$

$-2a+3a=1a$

$a=8\ b=0\ c=2$

$\frac{8x^2 - 2}{2}$ GCF: 2

$\frac{}{2}\ \frac{}{2}$

$2(4x^2-1)$

$2(2x+1)(2x-1)$

$\frac{8x^2+0x-2}{2}$ GCF: 2

$2(4x^2+0x-1)$ $a=4\ b=0\ c=1$

$2(2x+1)(2x-1)$

Factor

$6x^2 - 41x - 7$

$a=6 \quad b=41 \quad c=7$

$(3x+7)(2x-1)$

$-3x+14x=11x$

$(3x+1)(2x-7)$

$-21x+2x=-19x$

$6m^2 + 15mn - 9n^2$

$(-m \quad)(-m \quad)$

$(6x+1)(1x-7)$

$-42x+1x=-41x$