**Factor:** $3x^2 - 7x + 2$

$a \neq 1$

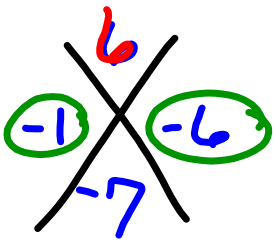
$3 \cdot 2 = 6$



① GCF

② Multiply $a \cdot c$

③ use the X method w/ the answ to step 2 & "b"




$3x^2 - x - 6x + 2$

④ Rewrite the problem as 4 terms

$(3x^2 - x)(-6x + 2)$

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

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

⑤ factor by grouping

**Factor:** $12x^2 - 19x + 4$

① GCF

$12 \cdot 4 = 48$

48
-16 -3
-19

$(12x^2 - 16x)(-3x + 4)$

$4x(3x-4) - 1(3x-4)$

$(4x-1)(3x-4)$

# Factoring Polynomials When...

| |
|---|
| The degree is 2 (Quadratic) |
| The # of terms is 3 (Trinomial) |
| The leading Coefficient ≠ 1 (a) |

$$ax^2 + bx + c$$

| Steps for Factoring Success |
|---|
| 1. GCF! (Always) |
| 2. Multiply a and C |
| 3. List the factors of the answer to Step #2 |
| 4. Which factors combine to equal b? |
| 5. Rewrite the problem as 4 terms |
| 6. Factor by Grouping |

# Factoring Perfect Cubes

Sum of cubes

$(a+b)(a^2-ab+b^2)$

S O AP

$a^3+b^3$

$x^3+8$

$(x+2)(x^2-2x+4)$

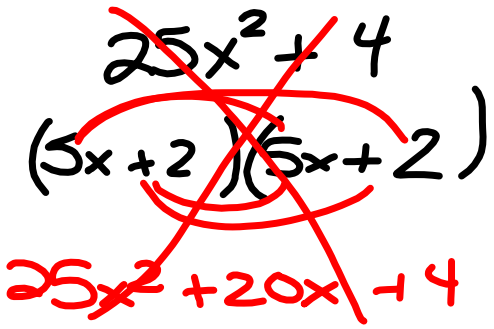
Difference of cubes

$(a-b)(a^2+ab+b^2)$

$x^3-8$

$(x-2)(x^2+2x+4)$

1. $\sqrt[3]{\ }$ of 1st term ($a^3$)
2. Same sign as the original problem
3. $\sqrt[3]{\ }$ of the last term ($b^3$)
4. Square "a"
5. Opposite Sign from orig. problem
6. Multiply a · b
7. last sign is always positive
8. Square "b"


25x² + 4
(5x + 2)(5x + 2)
25x² + 20x + 4

$$x^3+64$$

$$(x+4)(x^2-4x+16)$$

$250x^3-54$

$2(125x^3-27)$

$2(5x-3)(25x^2+15x+9)$

Foldable

Sum of Cubes

$(a+b)(a^2-ab+b^2)$

Difference of cubes

$(a-b)(a^2+ab+b^2)$