

Steps when factoring:

1. Take out GCF.
2. Factor what remains if possible.
  - a. If there are only two terms look for the Difference of Perfect Squares
  - b. If there are three terms .....

Factor.  $6x^2 - x - 12$

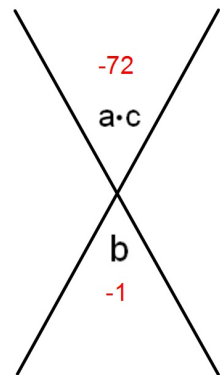
$$= ( \quad ) ( \quad )$$

Factoring Quadratics:  $6x^2 - x - 12$

$a = 6$

$b = -1$

$c = -12$

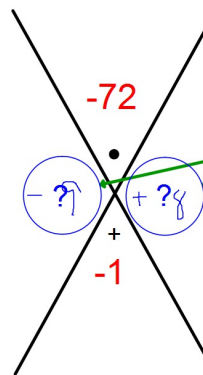


Factoring Quadratics:  $6x^2 - x - 12$

$a = 6$

$b = -1$

$c = -12$



Find two numbers that  
Multiply to  $-72$  and add to  $-1$

$$6x^2 - x - 12 = (2x - 3)(3x + 4)$$

GCF

$$\begin{array}{cc} & -72 \\ -9 & \times & +8 \\ & -1 \end{array}$$

|             |                      |                    |
|-------------|----------------------|--------------------|
|             | $2x$                 | $-3$               |
| $3x$<br>GCF | $6x^2$<br>First term | $-9x$              |
| $+4$        | $+8x$                | $-12$<br>Last Term |

Factor

$$10Q^2 - 17Q + 6 = (5Q - 6)(2Q - 1)$$

Look for GCF First!

$$\begin{array}{cc} & 60 \\ -5 & \times & -12 \\ & -17 \end{array}$$

|      |         |        |
|------|---------|--------|
|      | $5Q$    | $-6$   |
| $2Q$ | $10Q^2$ | $-12Q$ |
| $-1$ | $-5Q$   | $+6$   |

Factor:  $6x^2 + 33x - 18 = 3(x + 6)(2x - 1)$

Look for GCF First!

$$3(2x^2 + 11x - 6)$$

$$\begin{array}{cc} & -12 \\ +12 & \times & -1 \\ & 11 \end{array}$$

|      |        |        |
|------|--------|--------|
|      | $x$    | $+6$   |
| $2x$ | $2x^2$ | $+12x$ |
| $-1$ | $-x$   | $-6$   |

Factor each:

1.  $6x^2 + 19x - 7$

2.  $4x^2 - 16x + 15$

3.  $x^2 + 11x + 24$

4.  $x^2 - 5x - 36$

1.  $6x^2 + 19x - 7$

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

2.  $4x^2 - 16x + 15$

3.  $1x^2 + 11x + 24 = (x + 8)(x + 3)$

If leading coefficient is 1 ( $a=1$ ) then the numbers found using the X become the constants in the factors.

|       |       |
|-------|-------|
| $x$   | $+8$  |
| $x^2$ | $+8x$ |
| $+3$  | $+24$ |
| $+3x$ |       |

4.  $x^2 - 5x - 36$

$(x + 4)(x - 9)$