WATCH THOSE SIGNS!

+/+

$y^2 + 2y + 1$

$(y + 1)(y + 1)$

Signs are the same!
Sign of the middle term.

- / +

$y^2 - 2y + 1$

$(y - 1)(y - 1)$

Signs are the same!
Sign of the middle term.

- / -

$n^2 - n - 90$

$(n - 10)(n + 9)$

Signs are different!

Biggest factor takes the sign of the middle term.

+ / -

$m^2 + 5m - 6$

$(m + 6)(m - 1)$

Signs are different!

Biggest factor takes the sign of the middle term.

2.) $3n^2 + 5n + 2$

$a=3 \quad b=5 \quad c=2$

$ac=6$

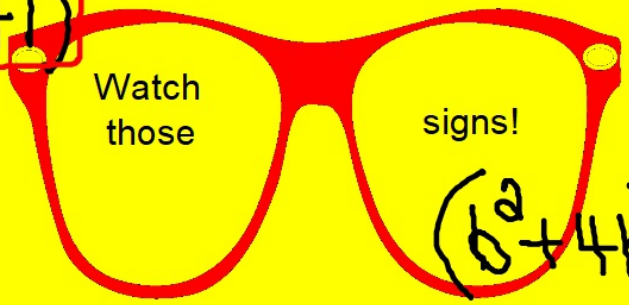
1	6
3	2

$(3n^2+3n)(+2n+2)$

$3n \quad 3n \quad 2 \quad 2$

$3n(n+1)+2(n+1)$

$(3n+2)(n+1)$



3.) $2y^2 + 9y - 5$

$b^2+12b+32$

$a=1 \quad b=12 \quad c=32$

$ac=32$

1	32
2	16
4	8

$(b^2+4b)(+8b+32)$

$b(b+4)+8(b+4)$

$(b+8)(b+4)$

Difference of Squares

Objective: Identify and Factor Special Polynomials; Difference of Squares.

Difference of Squares: $(a^2 - b^2)$ where a^2 and b^2 are perfect squares and are always separated by a subtraction sign.

Difference of Squares

WARM-UP

Directions: Simplify the following polynomials.

- $(x+4)(x-4)$ = $x^2-4x+4x-16$ = x^2-16
- $(5m+1)(5m-1)$ = $25m^2-5m+5m-1$ = $25m^2-1$
- $(2a+3b)(2a-3b)$ = $4a^2-6ab+6ab-9b^2$ = $4a^2-9b^2$

This resulting product is called a **DIFFERENCE OF SQUARES.**

Steps to Factor a DIFFERENCE OF SQUARES

1. First, make sure you have an actual difference of squares! (Must be a subtraction sign and you can square root both terms)
2. Use the following rule to factor: $a^2 - b^2 = (a+b)(a-b)$
3. Check your work by distributing!

EXAMPLES

Directions: Factor each difference of squares. Check your work by distributing. If a polynomial cannot be factored, write "prime."

1. $a^2 - 4$ $(a+2)(a-2)$	**2.** $n^2 - 64$ $(n+8)(n-8)$
3. $81 - x^2$ $(9+x)(9-x)$	**4.** $c^2 - 100$ $(c+10)(c-10)$
5. $k^2 + 25$ prime!	**6.** $1 - 49y^2$ $(1+7y)(1-7y)$
7. $9b^2 - 100$ $(3b+10)(3b-10)$	**8.** $25x^2 - 49$ $(5x+7)(5x-7)$
9. $16a^2 - 121$	**10.** $x^2 - 81y^2$
11. $4h^2 - 25g^2$	**12.** $64u^2 - v^2$

Sometimes you have to take out the GCF first including variables in order to have a Difference of Squares.

Example:

$48a^3 - 12a$ GCF =

When you write your final answer the GCF goes outside your two ( )

EXAMPLES WITH A GCF

$2(n+6)(n-6)$

$2(4s+3u)$
$(4s-3u)$

Directions: Look for a GCF first, then factor the remaining difference of squares. Check your work by distributing.

21. $2n^2 - 72$ $2 \quad 2$ $2(n^2-36)$	**22.** $18x^2 - 50$ $2 \quad 2$ $2(9x^2-25)$ $2(3x+5)$ $(3x-5)$
23. $32s^2 - 18u^2$ $2 \quad 2$ $2(16s^2-9u^2)$	**24.** $45q^3 - 20q$
25. $24a^2 - 54b^2$	**26.** $100b^3 - 36b$
27. $80n^4 - 125n^2$	**28.** $8x^2y - 32y^3$