DIFFERENCE OF SQUARES $(a^2 - b^2)$

Let's examine a special product: (a + b)(a - b)

What is the SAME about the two binomials?

What is DIFFERENT about the two binomials?

EXPAND (FOIL) and SIMPLIFY (COLLECT LIKE TERMS):

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

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

$(2x + 5)(2x - 5)$

TO EXPAND SIMPLIFY THIS SPECIAL PRODUCT, USE THE FORMULA:

$$(a + b)(a - b) = \underline{\hspace{6cm}}$$

The result is called a difference of squares. Two perfect squares being subtracted.

NOTE THESE PERFECT SQUARES – AND THEIR SQUARE ROOTS:

Today we will learn to recognize and factor these difference of squares.

HOW TO SPOT A DIFFERENCE OF SQUARES

$x^2 - 16$

$4y^2 - 49$

FACTORING A DIFFERENCE OF SQUARES

When you can recognize a difference of squares,
it is easy to **reverse the process** and **find the factors.**

Think <u>WHAT</u> multiplied by itself, equals the

"Factoring" means find the binomials that "FOIL" to this expression!

Factor: $x^2 - 49$

Notice the signs between the factors.
One will <u>always</u> have a _____ and the other will <u>always</u> have a _____.

Note: We always try to common factor first.
<u>Examples</u>:

FACTOR:

$x^2 - 64$ $x^2 - 16$ $25x^2 - 36$ $9x^2 - 121$

FACTOR. You will have to COMMON FACTOR FIRST!!

$2x^2 - 50$ $3x^2 - 48$ $5x^2 - 500$ $75x^2 - 27$

Ex: The area of the top of a classroom desk is represented by the expression $2500 - x^2$.

a) Determine the length and width of the desk

$A = 2500 - x^2$

b) Find the actual dimensions if $x = 10$ cm.

c) Determine the actual area