Brain Teaser Warm Up!

*Can you find **two** numbers...*

1. whose **product** is 20 and whose **sum** is 9?

    5, 4

2. whose **product** is 12 and whose **sum** is -8?

    -6, -2

3. whose **product** is -15 and whose **sum** is 2?

    -3, 5

Factoring Quadratic Trinomials

2ND Degree, 3 terms

Clear Learning Target

You will be able to factor and solve quadratic trinomials with a leading coefficient of 1.

Example #1: Factor. $x^2 + 9x + 20$

$\star$ "What two numbers multiply to 20 (constant) and add up to 9 (coefficient of x)?"

5, 4

$(x + 5)(x + 4)$

You Try! Factor. $x^2 - 8x + 12$

multiply: 12
add: -8 $-6, -2$

$(x - 6)(x - 2)$

Example #2: Factor. $x^2 + 2x - 15$

multiply: -15 ←
add: 2

ONLY ONE
is
Negative!

$-3, 5$

$(x - 3)(x + 5)$

You Try! Factor. $x^2 - 7x - 18$

multiply: -18 } $-9, 2$
add: -7

$(x+2)(x-9)$

Example #3: Solve. $x^2 + 6x - 27 = 0$

factor into
2 pieces, then
use Zero Product Prop

multiply: -27 } $-3, 9$
add: 6

$(x-3)(x+9) = 0$

$x - 3 = 0$ $x + 9 = 0$
$\quad +3 \ +3$ $\quad -9 \ -9$
$\boxed{x = 3}$ $\boxed{x = -9}$

You Try! Solve. $x^2 - 3x + 2 = 0$

multiply: 2 } $-2, -1$
add: -3 }

$(x - 2)(x - 1) = 0$

$x - 2 = 0$ $x - 1 = 0$

$x = 2$ $x = 1$