Warm Up – Determine if you should factor by GCF or grouping. Then Factor.

1. $3x^2 + 6x - 24$

$3 \quad 2 \cdot 3 \quad 3 \cdot 2 \cdot 2$

$3(x^2 + 2x - 8)$

2. $(xy - 7x) + (7y - 49)$

$x(y - 7) + 7(y - 7)$

$(x + 7)(y - 7)$

Solve.

3. $3k(k + 10) = 0$

$\frac{3k}{3} = \frac{0}{3}$

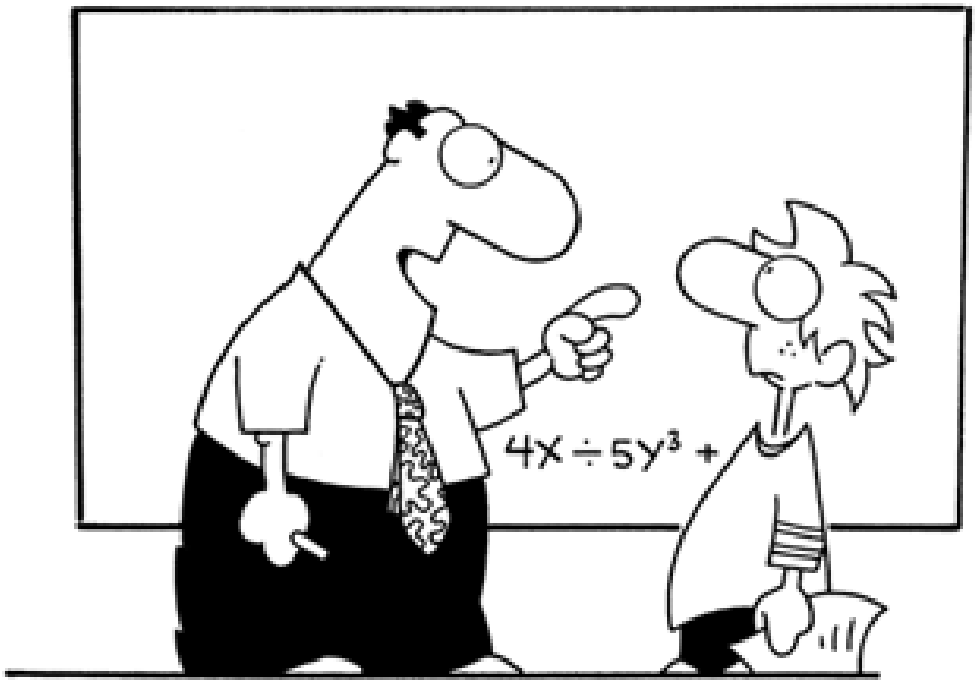
$k = 0$

$k + 10 = 0$

$-10 \quad -10$

$k = -10$

Factoring Trinomials



"Algebra will be important to you later in life. When you're my age, you can use it to torture people your age!"

Goals Aligned to Common Core Standards

You will recognize ways to rewrite an expression.

You will solve quadratic equations by factoring of the form $y = x^2+bx+c$ by inspection.

You will use the process of factoring in a quadratic function to reveal the zeros by solving quadratic equations.

You will interpret parts of an expression (factors).

Factoring a standard form quadratic

$f(x)=ax^2+bx+c$

ax^2+bx+c

How do you get...

a: mult. F(1st)

b: mult O + I then add

c: mult L (last)

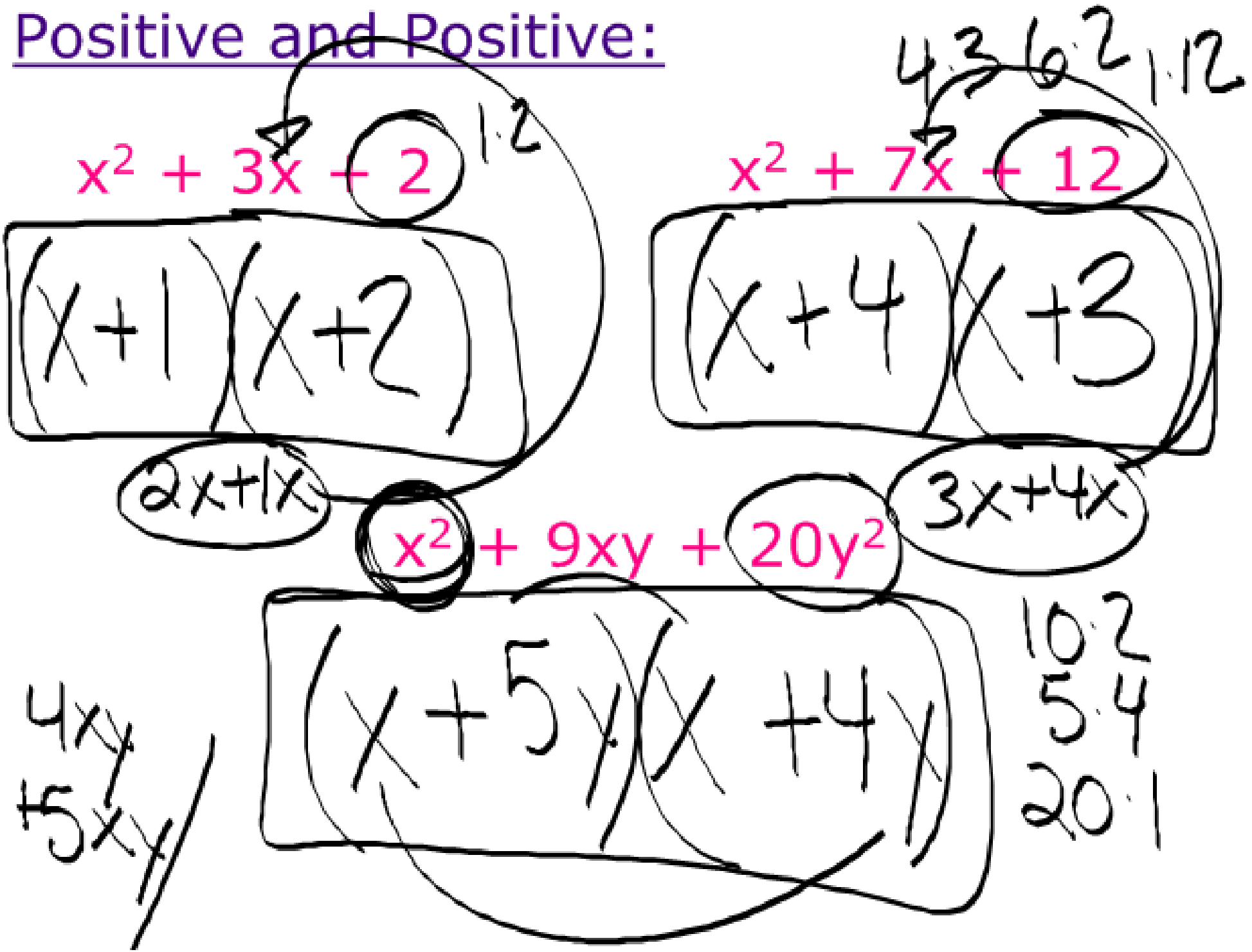
$(x+2)(x+3)$

$x \cdot x + 3x + 2x + 2 \cdot 3$

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

x^2+5x+6

Positive and Positive:



$x^2 + 3x + 2$

Could you use factoring by GCF here?
Why/why not?

Could you use factoring by grouping here?
Why/why not?

Negative and Positive:

$x^2 - 10x + 16$

$(x-8)(x-2)$

$4 \cdot 4$

$8 \cdot 2$

$16 \cdot 1$

$-2x - 8x$

$x^2 - 5x + 6$

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

$x^2 - xy + 56y^2$

When c is Negative:

$x^2 + 3x - 4$ → 2·2, 1·4

$(x+4)(x-1)$

$4x - 1x$

$x^2 - 2x - 8$ → 4·2, 8·1

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

$2x - 4x$

$x^2 + 11x - 26$

$(x+13)(x-2)$

When c is Negative:

$x^2 + 5x - 14$

$x^2 - 2x - 15$

5 · 3

15 · 1

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

$x^2 - 5xy - 84y^2$

3x - 5x

Solving Trinomials:

*Set the quadratic = 0. (in y's place)

*Factor.

*Make each set of parentheses equal to zero.

*Solve for your zeros/solutions/roots.

$x^2 + 11x + 24 = 0$ $x^2 + 13x - 48 = 0$

Find the zeros:

$x^2 - 7x = -6$

$x^2 - 7x + 6 = 0$

$2 \cdot 3 = 6$, $2 + 3 = 7$

$(x-6)(x-1)=0$

$x-6=0 \quad x-1=0$

$x=6 \quad x=1$

$\{6, 1\}$

$x^2 + 5x = 36$

$x^2 + 5x - 36 = 0$

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

$\{-9, 4\}$

Recall last unit:
$y = x^2+bx+c$ is a quadratic equation in standard form.

How is solving for a zero when graphing relate to finding zeros on a graph?

Goals Aligned to Common Core Standards

You can recognize ways to rewrite an expression.

You can solve quadratic equations by factoring of the form $y = x^2+bx+c$ by inspection.

You can use the process of factoring in a quadratic function to reveal the zeros by solving quadratic equations.

You can interpret parts of an expression (factors).