WELCOME

13.5: Factoring by Grouping

Warm Up

Factor:

1) $x^2 + 6x - 27$

2) $5x^2 + 11x + 6$

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

Learning Target

I can factor by using the <u>grouping method</u>.

Factoring by Grouping

Factoring by grouping is a method that <u>can be</u> used to factor a standard polynomial consisting of <u>4 terms</u> with no GCF.

$$2x^3 + 6x^2 + 5x + 15 =$$

*Group First two terms and last two terms.
Then factor out the GCF of each grouping.

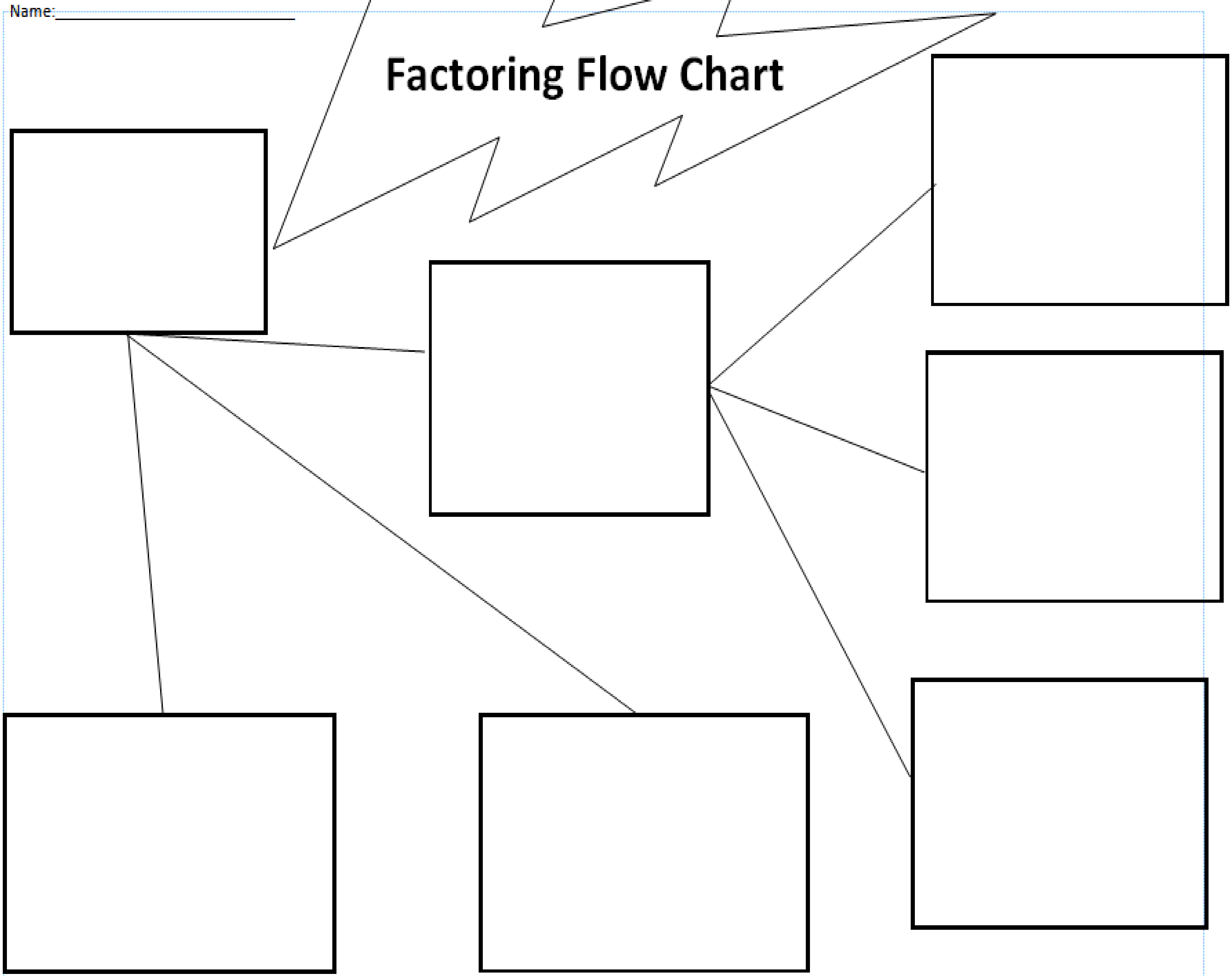
Practice: Factoring by Grouping

$$x^3 - x^2 + 2x - 2 =$$

$$5x^3 - 2x^2 - 15x + 6 =$$

Name:_______________________________

Factoring Flow Chart



QUIZ!

WELCOME

Math 2

Chapter 13: Polynomials and Quadratics

Last Night's HW: Chapter 13.5-Front Side

Tonight's HW:

Warm Up

Factor each expression:

1. $6x^2 - 32x - 70$

2. $12x^3 + 2x^2 - 30x - 5$

Find the ZEROES:

3. $x^2 + 2x - 36 = 12$

Learning Target

I can identify and factor the difference of two squares.

I can also identify and factor perfect square trinomials.

Multiplying Binomials Discovery

Math 2 13.5 Classwork (Side #1)

Name:________________________________

1) $(x+3)\cdot(x-3)$

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

3) $(x+1)\cdot(x-1)$

4) $(2x+3)\cdot(2x-3)$

5) $(x+y)\cdot(x-y)$

6) $(2x+3y)\cdot(2x-3y)$

<u>My Conjecture:</u>

<u>Class Observations/Revision:</u>

Vocab

Difference: Subtraction

Square (perfect square): Numbers that when we take the square root result in a whole number

Ex: 1, 4, 9, x^2, y^4

Difference of Two Squares

$$a^2 - b^2 = (a + b)(a - b)$$

Difference of two squares

= Sum • Difference

Factoring the difference of a^2 & b^2 always results in (a+b)(a-b)

$$a^2 - b^2 = (a + b)(a - b)$$

$$9x^2 - 16$$

Step 1: Write the two parentheses (one with a + sign & one with a - sign)

Step 2: Find $\sqrt{a^2} = a$ & $\sqrt{b^2} = b$

Step 3: Fill in parentheses
Check w/FOIL

Practice

Completely factor the following differences of two squares.

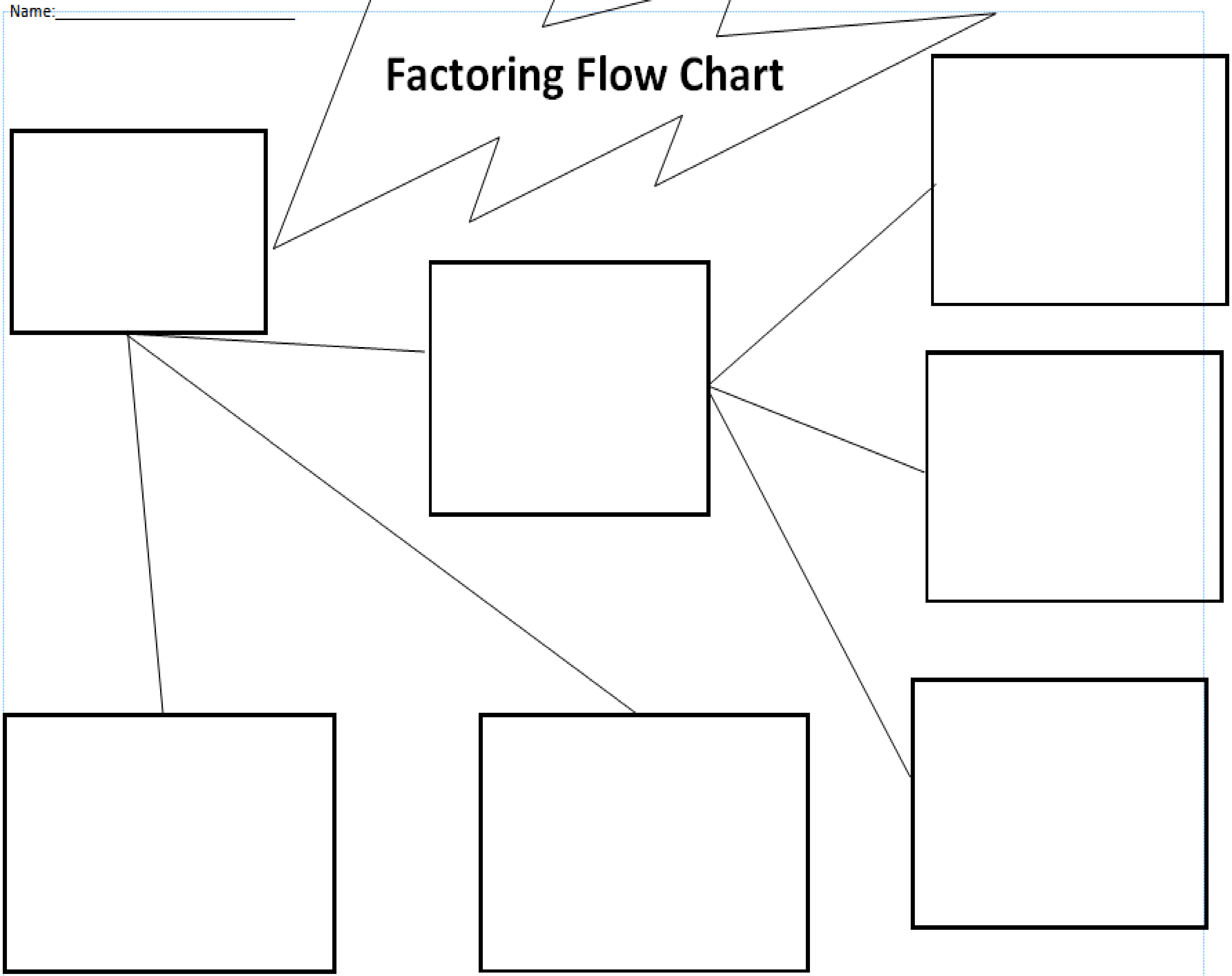
1. $x^2 - 36 =$

2. $100 - 49z^2$

3. $p^4 - 16 =$

Name:______________________________

Factoring Flow Chart



Multiplying Binomials Discovery Side #2

Math 2 13.5 Classwork (Side #2)

Name:______________________________

1) $(x+6)\cdot(x+6)$

2) $(x-4)\cdot(x-4)$

3) $(x+2)\cdot(x+2)$

4) $(2x-1)\cdot(2x-1)$

5) $(x+y)\cdot(x+y)$

6) $(x-y)\cdot(x-y)$

<u>My Conjecture:</u>

<u>Class Observations/Revision:</u>

The Square of a Binomial

When you square a binomial $(a \pm b)^2$ we find the pattern $a^2 \pm 2ab + b^2$ always occurs

$$\left.\begin{array}{l} (a + b)^2 = a^2 + 2ab + b^2 \\ \\ (a - b)^2 = a^2 - 2ab + b^2 \end{array}\right\} \text{Perfect Square Trinomials}$$

This pattern can be used to help us factor faster

Detecting & Solving Perfect Squares!

Is $\underline{4x^2 - 20x + 25}$ a Perfect Square Trinomial??

First Term	Second Term	Third Term
a^2	$2ab$	b^2
$\sqrt{4x^2} = 2x$	$20x = 2(2x)(5)$	$\sqrt{25} = 5$

$4x^2 - 12x + 9$

Step 1: Make sure it's a perfect square (middle is = $2 \cdot \sqrt{1^{st}} \cdot \sqrt{3^{rd}}$)

Step 2: Make two parentheses with ++ or - - based on second term

Step 3: Plug in square root of first and last term.

Factoring a Perfect Square Trinomial

$x^2 + 12x + 36 =$

$9x^2 + 30x + 25 =$

Factoring Flow Chart