

## Lesson 19: Factoring Day 2

### Objectives:

- ~ Factor by Grouping
- ~ Factor with leading coefficients of not 1

## Lesson 5.4: GCF and Factor by Grouping

*Factor out the GCF: Remember, Sometimes the GCF is a Binomial. Factor the Binomial out.*

1.  $4x(x-3) + 5(x-3)$

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

## Lesson 5.4: GCF and Factor by Grouping

### Factor by Grouping (4 terms)

**Step 1:** Group the terms with common factors.

Sometimes it will be necessary to rearrange the terms.

**Step 2:** In each grouping, factor out the common factor.

**Step 3:** Factor out the common factor that remains (usually a Binomial).

**Step 4:** Check your answer.

Lesson 5.4: GCF and Factor by Grouping

Factor by Grouping

Examples:

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

Lesson 5.4: GCF and Factor by Grouping

Factor by Grouping

Examples:

4.  $6x^2 + 9x - 10x - 15$

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We can use Factor by Grouping to factor trinomials that have a leading coefficient of something other than 1.

We just need to fill out the chart like normal and then put the two numbers "m" and "n" as the middle term – just split up.

**Remember to take out the GCF first!**

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### FACTORING BY GROUPING:

$ax^2$	$\underline{nx}$
$\underline{mx}$	$c$

**Step 1:** Find the value of  $A(C)$

**Step 2:** Find the pair of integers whose product equals  $ac$ , and whose sum equals  $b$ . Call these integers  $m$  and  $n$ , where  $mn = ac$  and  $m + n = b$

**Step 3:** Rewrite the expression as:

$$ax^2 + bx + c = ax^2 + mx + nx + c$$

**Step 4:** Factor the new expression by grouping.

**Step 5:** CHECK YOUR ANSWER!

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### Examples: by grouping

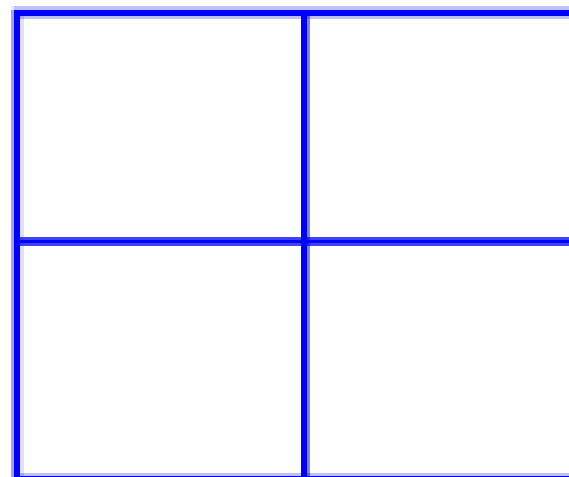
5.  $4x^2 + 7x + 3$



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## Examples: by "Box" method

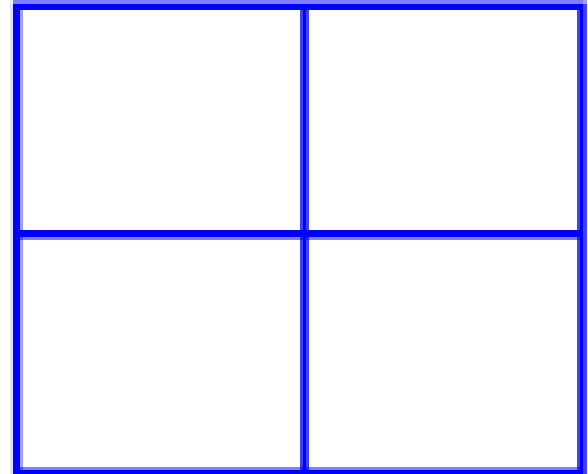
5.  $4x^2 + 7x + 3$



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Examples:

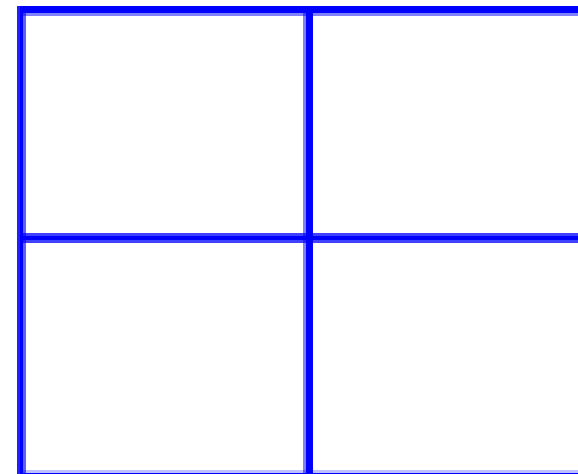
6.  $2x^2 + 7x + 6$



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## Examples: Remember GCF!

7.  $4x^2 - 2x - 6$



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### Examples:

8.  $2x^6 - 32$

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### Examples:

9.  $8x^4 - 128$

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### Objectives:

- ~ Factor by Grouping
- ~ Factor with leading coefficients of not 1

Can you?

# Assignment 19

*Due at the beginning of next class*