Warm Up February 19, 2019

1.) Simplify the following polynomial expressions:

A. $(n^4 - 2n - 1) + (5n - n^4 + 5) = 3n + 4$

B. $(7m^2 + 3m - 4) - (3m^2 + 9m + 5)$

$7m^2 + 3m - 4 - 3m^2 - 9m - 5 = 4m^2 - 6m - 9$

C. $5w(2w^2 + 6w)$

$5w \cdot 2w^2 = 10w^3$

$5w \cdot 6w = 30w^2$

$10w^3 + 30w^2$

2.) Write the equation of a line parallel to $x - 4y = 8$ that pass through the point $(-8, 2)$.

same slope!

$x - 4y = 8$

$-x \quad -x$

$-4y = -x + 8$

$\frac{-4y}{-4} = \frac{-x}{-4} + \frac{8}{-4}$

$y = \frac{1}{4}x - 2$

$y = mx + b$

$2 = \frac{1}{4}(-8) + b$

$2 = -2 + b$

$+2 \quad +2$

$4 = b$

$y = \frac{1}{4}x + 4$

What We Know So Far:

Adding and Subtracting Polynomials =

_____ _____ _____

Multiplying Monomials and Polynomials =

_____ _____ _____

_____

Multiplying Binomials

Steps for the box method

1. Find the area of each small box.
2. Find the area of the large box by combing the areas of all four small boxes.

A. EXAMPLE: Use the box method to find the product of $(x+1)(x+2)$ by finding the area of each individual box and then adding them together. Each binomial has two terms. The side lengths of the small boxes will be represented by the terms from each binomial.

	x	+ 4
x	x^2	4x
+ 2	2x	8

1. determine the area of each box

2. Combine all four small boxes together by addition to find the total area of the large box

_____ = (x+2)(x+4)

$x^2+4x+2x+8=x^2+6x+8$

B. As you work through the problems below, think about what is happening mathematically with the two binomials. How is the area of each small box determined? Try to recognize patterns or repeated procedures and attempt to derive a procedure to multiply the binomials that does not require the use boxes.

Directions: Use the box method to find the product of the binomials.

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

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

Answer= $x^2+8x+15$

2. $(x+4)(x-3)$

	x	-3
x	x^2	$-3x$
$+4$	$4x$	-12

Answer= x^2+x-12

3. $(x+1)(x-7)$

	x	-7
x	x^2	$-7x$
$+1$	x	-7

Answer= x^2-6x-7

4. $(x-2)(2x-6)$

	$2x$	-6
x	$2x^2$	$-6x$
-2	$-4x$	$+12$

Answer= $2x^2-10x+12$

C. Looking back at your work from part B, the box method, think about any patterns or repeated procedures that you did. For example, How did you find the area of just one box?

Describe a procedure that ***does not*** require the use of boxes to find the product of the two binomials below.

To multiply $(x+4)(x+6)$

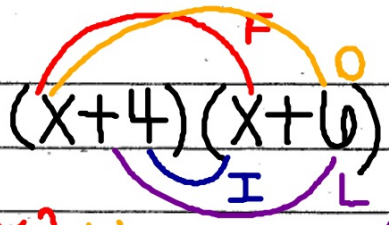
F $x \cdot x = x^2$

O $x \cdot 6 = 6x$] $+10x$

I $4 \cdot x = 4x$]

L $4 \cdot 6 = 24$

$x^2 + 10x + 24$



$x^2 + 6x + 4x + 24$

$x^2 + 10x + 24$

FOIL Method
(First, Outer, Inner, Last)

D. Apply the method you described in part C to find the products below. DO NOT use the box method.

a. $(x+6)(x+7)$

F $x \cdot x = x^2$

O $x \cdot 7 = 7x$

I $6 \cdot x = 6x$

L $6 \cdot 7 = 42$

$x^2+13x+42$

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

F O I L

$x^2-5x+2x-10$

$x^2-3x-10$

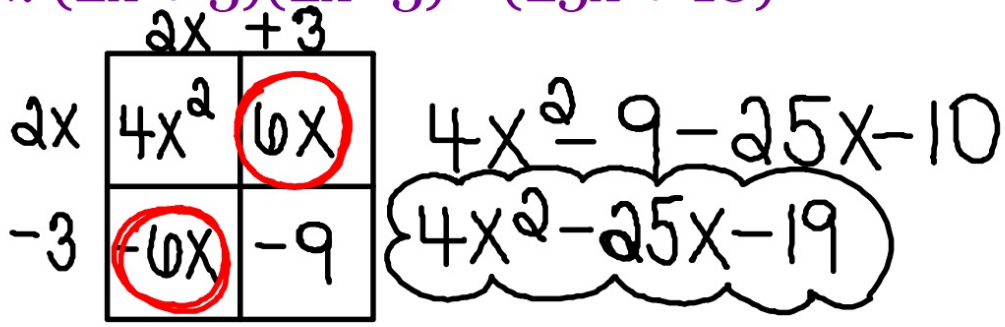
c. $(3x+1)(x-3)$

F O I L

$3x^2-9x+x-3$

$3x^2-8x-3$

N. $(2x + 3)(2x - 3) - (25x + 10)$



C. $3(x + 1)^2$