Factoring Quadratics– Day 2
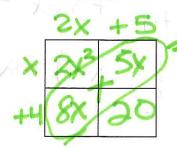
Explore

Name_____
Date_____ Period___ 5th

Factoring Using the X-Box Method

Unit 8 AH Qw

Review: Find the area of a rectangle with the dimensions of $(2x + 5)$ ft and $(x + 4)$ ft.

$2x + 5 = 13x$

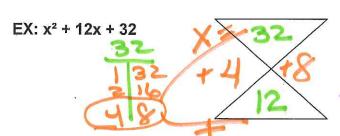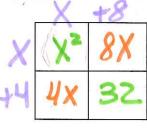|	$2x$	$+5$
x	$2x^3$	$5x$
$+4$	$8x$	20

$$ax^2 + bx + c$$

$$2x^2 + 13x + 20$$

X-box method: to find factors

1. Always check to see if you need to divide out a __GCF__.

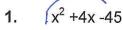2. Find two numbers **multiply** together (factors) equal **ac** and **add** together equal **b**

3. Put the four terms in the box and find the **GCF** of each **row** or **column**

EX: $x^2 + 12x + 32$

```
32
1 | 32
2 | 16
4 | 8
```

X-diagram: -32, $+4$, $+8$, 12

	x	$+8$
x	x^2	$8x$
$+4$	$4x$	32

$(x+8)(x+4)$

Factor each trinomial using the box method.

1. $x^2 + 4x - 45$

```
45
1 | 45
5 | 9
```

X-diagram: -45, $+9$, -5, 4

	x	-5
x	x^2	$-5x$
$+9$	$9x$	-45

$(x-5)(x+9)$

2. $x^2 + 9x + 8$

```
8
1 | 8
```

X-diagram: 8, $+1$, $+8$, 9

	x	$+8$
x	x^2	$8x$
$+1$	x	8

$(x+8)(x+1)$

3. $3x^2 - 19x + 6$

```
18
1 | 18
```

X-diagram: 18, $a \cdot c$, -1, 6, -18, -19

	$3x$	-6
$3x$	$3x^2$	$-18x$
-1	$-1x$	6

$(x-6)(3x-1)$

4. $4x^2 - 8x + 3$

```
12
1 | 12
2 | 6
```

X-diagram: 12, -2, -6, -8

	$2x$	-3
$2x$	$4x^2$	$-6x$
-1	$-2x$	3

$(2x-3)(2x-1)$

5. $3x^2 + 2x - 16$

$$\frac{48}{\begin{array}{c|c} 1 & 48 \\ 2 & 24 \\ 4 & 12 \\ \boxed{6} & \boxed{8} \end{array}}$$

X-2

-48 $+8$ -6 2

$3X$	$3x^2$	$-6X$
$+8$	$+8x$	-16

$(X-2)(3X+8)$

6. $4x^2 + 4x - 3$

$$\frac{12}{\begin{array}{c|c} 1 & 12 \\ \boxed{2} & \boxed{6} \end{array}}$$

2X-1

-12 $+6$ -2 $+4$

$2X$	$4x^2$	$-2X$
$+3$	$6x$	-3

$(2X-1)(2X+3)$

7. $6x^2 - 5x - 4$

$$\frac{24}{\begin{array}{c|c} 1 & 24 \\ 2 & 12 \\ \boxed{3} & \boxed{8} \end{array}}$$

3X-4

-24 $+3$ -8 -5

$2X$	$6x^2$	$-8X$
$+1$	$3X$	-4

$(3X-4)(2X+1)$