MTH1W – Unit 6: Algebra II

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Lesson #6.2: Multiplying Binomials

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Learning Goal: We are learning to multiply two binomials by using the distributive property.

Review: Expand by using the Distributive Property

1) $2x(4x+7)$

$= 4x(2x) + 7(2x)$

$= 8x^2 + 14x$

2) $-6x(x-6)$

$= -6x^2 + 36x$

As you can see, the monomial in front gets multiplied into each term of the binomial. What happens if we have two binomials being multiplied? We follow a very similar method!. This time the front bracket is distributed to each term, and then we need to distribute each term into the brackets. This is called the "Double Distributive" property.

Expand by Double Distributing → multiplying

3) $(4x-6)(7x+8)$

$= 7x(4x-6) + 8(4x-6)$

$= 28x^2 - 42x + 32x - 48$ (combine)

$= 28x^2 - 10x - 48$

4) $(5v-7)(2v+2)$

$= 2v(5v-7) + 2(5v-7)$

$= 10v^2 - 14v + 10v - 14$

$= 10v^2 - 4v - 14$

We can do this a little bit fast by using the acronym FOIL.

First
Outside
Inside
Last

} use multiplying

Expand by foiling.

5) $(8n+2)(3n-8)$

$= 24n^2 - 64n + 6n - 16$

$= 24n^2 - 58n - 16$

6) $(x+1)(3x-8)$

$= 3x^2 - 8x + 3x - 8$

$= 3x^2 - 5x - 8$

7) $(5x+3)(5x-3)$

$= 25x^2 - 15x + 15x - 9$

$= 25x^2 - 9$

★ Difference of Squares

8) $(4x-7)^2$

$= (4x-7)(4x-7)$

$= 16x^2 - 28x - 28x + 49$

$= 16x^2 - 56x + 49$

★ Perfect Square

Expand the binomials FIRST, then distribute the number in front.

9) $4(x+9)(x-5)$

$= 4(x^2 - 5x + 9x - 45)$

$= 4(x^2 + 4x - 45)$

$= 4x^2 + 16x - 180$

10) $-\frac{1}{2}(x-10)(x+4)$

$= \frac{-1}{2}(x^2 + 4x - 10x - 40)$

$= \frac{-1}{2}(x^2 - 6x - 40)$

$= -\frac{1}{2}x^2 + 3x + 20$

11) $-4(2v+2)(v+3)$

12) $5(8x+9)^2$

$= 5(8x+9)(8x+9)$

$= 5(64x^2 + 72x + 72x + 81)$

$= 5(64x^2 + 144x + 81)$

$= 320x^2 + 720x + 405$

Success Criteria

- I can multiply two binomials by using the distributive property.