Unit 1 – The Building Blocks of Algebra

9/10/19 B

Name: _____ CC Algebra 1

Lesson 3: ***The Method of Double Distribution***

- **Objective:** Students will be able to identify equivalent algebraic expressions by applying the distributive property of multiplication.

Warm Up: Consider the product (x – 2)(x + 5). It is equivalent to one of the expressions below. Determine which by substituting in the given values for *x*.

	(x – 2)(x + 5)	$x^2 - 10$	$x^2 + 3x - 10$
x = 3	$(3-2)(3+5)$ $(1)\cdot(8)$ 8	$(3)^2 - 10$ $9 - 10$ -1	$(3)^2 + 3(3) - 10$ $9 + 9 - 10$ 8 ✓
x = 5			

Modeling: Write the following expressions as equivalent trinomials (*an expression involving three terms*) using the method of double distribution.

(a) (x + 6)(x – 3)

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

$x^2 + 3x - 18$

(b) (2x – 1)(x + 4)

	1x	+4
2x	$2x^2$	+8x
-1	-1x	-4

$2x^2 + 7x - 4$

(c) $(x - 2)^2$

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

$x^2 - 2x - 2x + 4$

$x^2 - 4x + 4$

$x^2 - 4$

$-2x + 4$

$x^2 - 4x + 4$

Independent Task #1: Which of the following expressions is equivalent to the product (x – 2)(x – 4)?

(1) $x^2 + 8$

(2) $x^2 - 6x - 8$

(3) $x^2 - 6x + 8$

(4) $x^2 - 8$

	x	-2
x	x^2	-2x
-4	-4x	8

$x^2 - 6x + 8$

Independent Task #2: Which of the following expressions is equivalent to $(x + 7)^2$?

(1) $x^2 + 49$

(2) (x – 7)(x + 7)

(3) $x^2 + 14x + 49$

(4) $49x^2$

$(x+7)(x+7)$

$x^2 + 7x + 7x + 49$

$x^2 + 14x + 49$

Group Task:

1) When reading some schematics of a rectangular garden, you notice the binomial x + 8 represents the length and the binomial x – 1 represents the width.

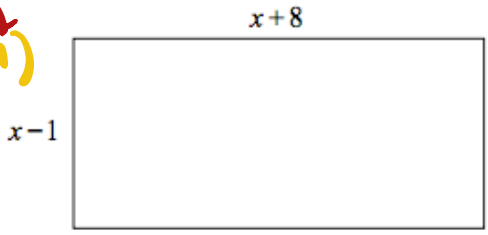
(a) Write an expression that represents the total area of the garden in the form $x^2 + bx + c$.

Remember: Area = Length × Width

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

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

$x^2 + 7x - 8$



(b) Check the equivalency of your expression by substituting two values for *x*.

	(x + 8)(x – 1)	Your Expression from Part A
x = 3		
x = 10		

2) Mariah thinks that the following rule should always hold true. Do you agree? Find evidence for or against the following equivalency rule by substituting values in for *a* and *b*.

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

Extension: Create an equivalent trinomial for $(a + b)^2$ using the method of double distribution.

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Exit Question: If the length of a square measures 3x –2, express the area of the square as a polynomial.

[redacted]

3x-2

3x-2

Homework: ***The Method of Double Distribution***

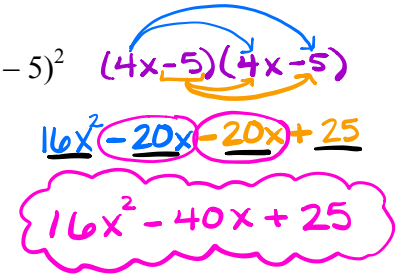
1) Rewrite each expression below in simplest form by applying the distributive property of multiplication.

(a) $(x + 3)(x + 6)$

(b) $(3x – 4)(3x + 2)$

(c) $(x + 3)(x – 3)$

(d) $(4x – 5)^2$



2) If the sides of a rectangle are $4x + 9$ and $x – 8$, express the area of the rectangle as a polynomial. Then, show that the expressions are equivalent by letting $x = 3$.

Bonus Question: If the edge of a cube is $x – 1$, express the *volume* of the cube as a polynomial. Then, show that the expressions are equivalent by letting $x = 3$.