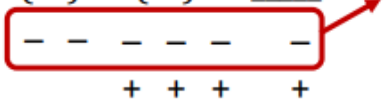
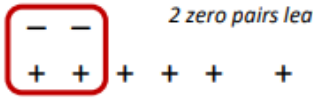
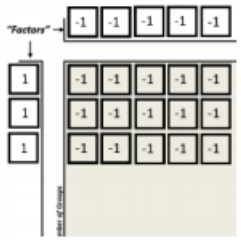
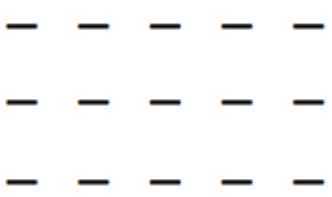
Build/Draw/Write Algebra Concepts

(**Note:** Different problems may be represented in each progression.)

Add and Subtract Integers between -10 and 10 (7.NS.1d)

Build	***Draw***	***Write***
Sam's recent balance was -5 dollars Then he earned $7, so his Grandma *added* $7 to his recent balance What is Sam's new balance?  (-5) + 7 = 2	**Subtract: a – b** (-2) – (-6) = 4  *Add 4 zero pairs and take away 6 negatives* **Add the Opposite/Additive Inverse: a + (-b)** (-2) + (+6) = 4  *2 zero pairs leave 4 positives*	*Say: Add 6 positives to 8 negatives* (-8) + (6) = -2 *Think: 6 zero pairs and 2 more negatives*

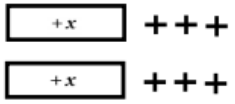
Multiply and Divide Integers between -10 and 10 (7.NS.2c)

Build	***Draw***	***Write***
"3 times negative 5 is equal to 3 groups of 5 negatives" 3(-5) = -15 	*"3 times negative 5 is equal to 3 groups of 5 negatives"* 3(-5) = -15 	*"8 times negative 5 is equal to 8 groups of 5 negatives"* 8(-5) = -40

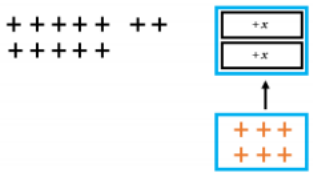
Build/Draw/Write Algebra Concepts

(**Note:** Different problems may be represented in each progression.)

Translate Algebraic Expressions Between Words and Symbols (6.EE.2a)

Build	*Draw*	*Write*
multiply add 2 times the quantity of (4 plus x)  $2(4 + x)$	add multiply The sum of (x and 3), times 2  $2(x + 3)$	add multiply The sum of (x and 5), times 3 $3(x + 5)$

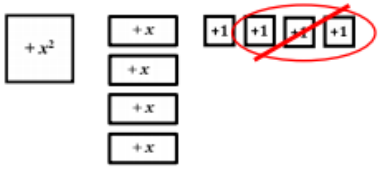
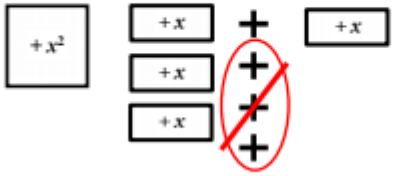
Evaluate Algebraic Expressions (6.EE.2c)

Build	*Draw*	*Write*
$2x + 3$, when $x = 4$  $8 + 3 = 11$	Total Cost = Cup + Refills 12 + $2x$  (Refilled 3 times) Total Cost = 12 + 2(3) Total Cost = 12 + 6 Total Cost = 18 dollars	*Think: 1 more than 2 times 8* $2x + 1$, when $x = 8$ $2x + 1 = 2(8) + 1$ $= 16 + 1$ $= 17$

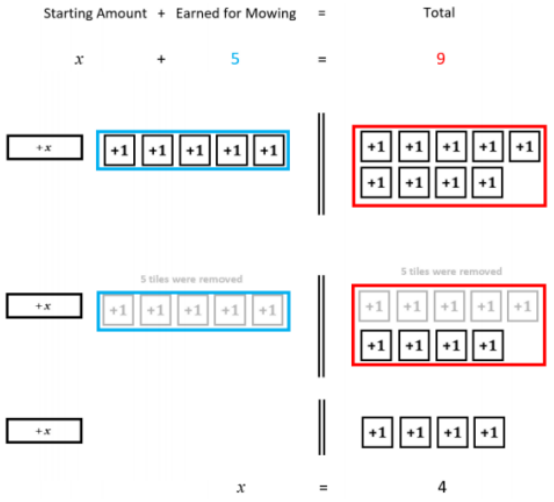
Build/Draw/Write Algebra Concepts

(**Note:** Different problems may be represented in each progression.)

Simplify Algebraic Expressions (6.EE.4)

Build	***Draw***	***Write***
$x^2 + 3x + 4 + x - 3$  $x^2 + 4x + 1$	$x^2 + 3x + 4 + x - 3$ 	Not Simplified $x^2 + 5x + 9 + x - 2$ Simplified $x^2 + 5x + x + 9 - 2$ $x^2 + 6x + 7$

Solve 1 – Step Equations (6.EE.7)

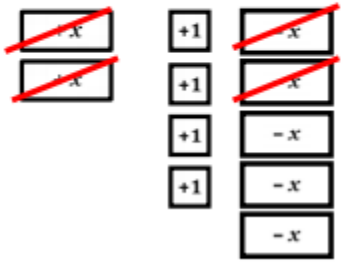
Build	***Draw***	***Write***
	*What number plus 3 is equal to 12?* $x + 3 = 12$  $x = 12 - 3 = 9$ *Draw x + 3 = 12.* *Then, cross out 3 "plus signs" from both sides.*	$x + 7 = 10$ *Undo addition by subtracting* $-7 \quad -7$ *Maintain Equality* $x = 3$

Build/Draw/Write Algebra Concepts

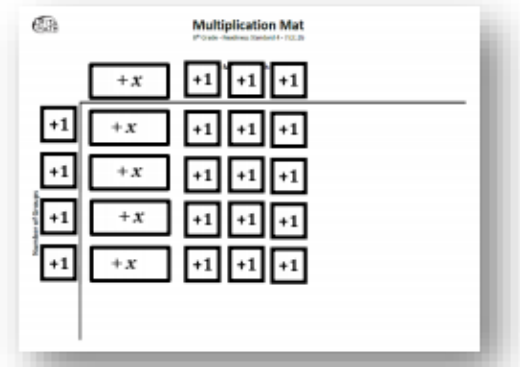
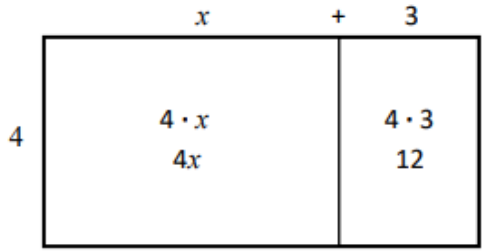
(**Note:** Different problems may be represented in each progression.)

Add and subtract linear expressions (7.EE.1a)

Build	***Draw***	***Write***

$2x + (4 - 5x)$
$2x + (4 + -5x) = -3x + 5$
 
	$2x + (5 - 4x)$
	$2x + (5 + -4x) = -2x + 5$
	 
		$2x + (4 - 8x)$
		$2x + 4 + -8x$
		$2x + -8x + 4$
		$-6x + 4$
		• *Re-write the linear expression using the "add the opposite to subtract" strategy.*
		  • *Inside the parentheses*
		  • *Outside the parentheses*
		• *Group like terms*
		• *Combine like terms by adding or taking away zero pairs*

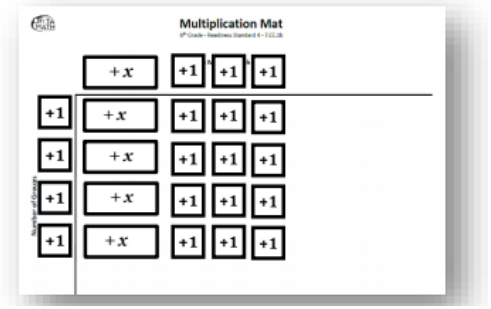
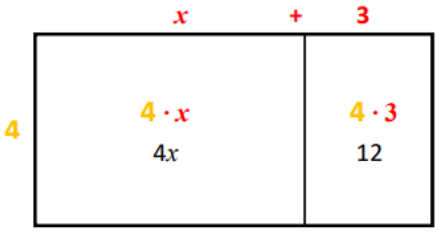
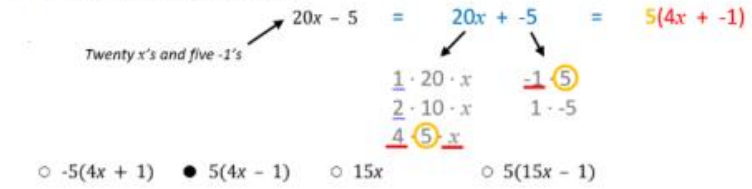
Expand linear expressions (7.EE.1b)

Build	***Draw***	***Write***
$4(x + 3) = 4x + 12$ 	$4(x + 3) = 4x + 12$ 	$8(x + 6) + 3x$ $8x + 48 + 3x$ $11x + 48$

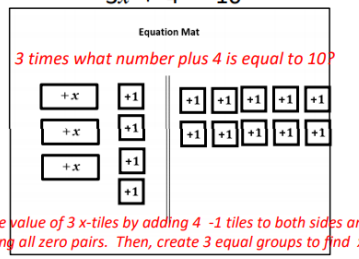
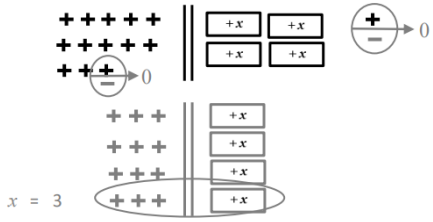
Build/Draw/Write Algebra Concepts

(**Note:** Different problems may be represented in each progression.)

Factor linear expressions (7.EE.1c)

Build	*Draw*	*Write*
$4x + 12 = 4(x + 3)$ 	$4x + 12 = 4(x + 3)$ 	Find the equivalent factored expression: 

Solve equations with more than one step (7.EE.4a)

Build	*Draw*	*Write*
Say and build the equation. $3x + 4 = 10$  *Find the value of 3 x-tiles by adding 4 -1 tiles to both sides and removing all zero pairs. Then, create 3 equal groups to find x = 2.*	*13 is equal to 4 times what number plus 1?* $13 = 4x + 1$  *Find the value of the x's by creating 1 zero pair on both sides. Then, divide the 12 remaining positives into 4 equal groups.*