Learning Target: I will add and subtract integers between -10 and 10   8th Grade - Readiness Standard 1 - 7.NS.1d
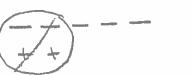- Form A

1. We Do Together: Draw, say, write and think add to subtract.

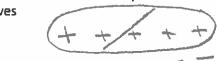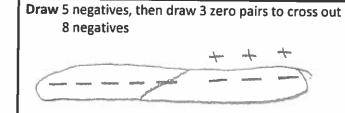|	
Draw 6 negatives and cross out 2 negatives	**Draw** 6 negatives and 2 positives to find the total
Say the <u>subtraction</u> problem and **write** the answer (-6) − (-2) = _−4_	**Say** the "<u>add to subtract</u>" equation and **write** the total (-6) + (+2) = _−4_
Draw 3 negatives, then draw 5 zero pairs to cross out 5 positives	**Draw** 3 negatives and 5 negatives to find the total
Say the <u>subtraction</u> problem and **write** the answer (-3) − (+5) = _−8_	**Say** the "<u>add to subtract</u>" equation and **write** the total (-3) + (-5) = _−8_

2. Reflect: What questions do you have about adding and subtracting integers?

3. You Do Together: Draw, say, write and think add to subtract.

Draw 5 negatives, then draw 3 zero pairs to cross out 8 negatives	**Draw** 5 negatives and 8 positives to find the total
Say the <u>subtraction</u> problem and **write** the answer (-5) − (-8) = _+3_	**Say** the "<u>add to subtract</u>" equation and **write** the total (-5) + (+8) = _+3_
Draw 2 negatives, then draw 4 zero pairs to cross out 4 positives	**Draw** 2 negatives and 4 negatives to find the total
Say the <u>subtraction</u> problem and **write** the answer (-2) − (+4) = _−6_	**Say** the "<u>add to subtract</u>" equation and **write** the total (-2) + (-4) = _−6_

Name _____   Date _____

Learning Target: I will multiply and divide integers between -10 and 10   8th Grade - Readiness Standard 2 - 7.NS.2c

- Form A

1. We Do Together: Draw, say, write and think multiply to divide.   *Represent both meanings of division*

Draw 3 groups of 4 negatives	Draw to <u>divide</u> 12 negatives into 3 equal groups
Group 1 — — — — Group 2 — — — — Group 3 — — — — Total = -12	Group 1 — — — — Group 2 — — — — Group 3 — — — — 3 groups of -12
Say the <u>multiplication</u> problem and **write** the answer 3(-4) = -12	**Say** the "<u>multiply to divide</u>" equation and **write** answers -12 ÷ 3 = -4 *Think: 3(-4) = -12*
Draw the opposite of 4 groups of 5 positives... which is equal to 4 groups of 5 <u>negatives</u> Group 1 — — — — — Group 2 — — — — — Group 3 — — — — — Group 4 — — — — — Total = -20	Draw to <u>divide</u> 20 negatives into equal groups of -5 4 groups of -5 { — — — — — — — — — — — — — — — — } 4 groups of -5
Say the <u>multiplication</u> problem and **write** the answer -4(+5) = +4(-5) = -20	**Say** the "<u>multiply to divide</u>" equation and **write** answers -20 ÷ -5 = 4 *Think: 4 (-5) = -20*

2. Reflect: What questions do you have about multiplying and dividing integers?

3. You Do Together: Draw, say, write and think multiply to divide.   *Represent both meanings of division*

Draw 2 groups of 5 negatives	Draw to <u>divide</u> 10 negatives into 2 equal groups
Group 1 — — — — — Group 2 — — — — — Total = -10	Group 1 — — — — — Group 2 — — — — — 2 groups of ____
Say the <u>multiplication</u> problem and **write** the answer 2(-5) = -10	**Say** the "<u>multiply to divide</u>" equation and **write** answers -10 ÷ 2 = -5 *Think: 2(-5) = -10*
Draw the opposite of 4 groups of 3 negatives... which is equal to 4 groups of 3 <u>positives</u> Group 1 + + + Group 2 + + + Group 3 + + + Group 4 + + + Total = 12	Draw to <u>divide</u> 12 negatives into equal groups of -3 4 groups of -3 { — — — — — — — — — — — — } ____ groups of -3
Say the <u>multiplication</u> problem and **write** the answer -4(-3) = +4(+3) = 12	**Say** the "<u>multiply to divide</u>" equation and **write** answers -12 ÷ -3 = 4 *Think: 4 (-3) = -12*

DELTA MATH

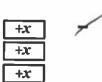**Learning Target:** I will add and subtract algebraic expressions   8th Grade - Readiness Standard 3 - 7.EE.1a - Form A

1. We Do Together: Say, combine, write and add the opposite to subtract. $(a - b = a + \text{-}b)$

Say the expressions and **combine** the like terms	Write as <u>add the opposite to subtract</u>, then **draw**
$(x + 3) + (4x + \text{-}1)$	$(x + 3) - (4x + \text{-}1)$
	$(x + 3) + \underline{(\text{-}4x + 1)}$
Write the equivalent simplified algebraic expression	**Write** the equivalent simplified algebraic expression
$5x + 2$	$\text{-}3x + 4$

2. Reflect: What questions do you have about adding and subtracting algebraic expressions?

3. You Do Together: Say, combine, write and add the opposite to subtract. $(a - b = a + \text{-}b)$

Say the expressions and **combine** the like terms	Write as <u>add the opposite</u> to subtract, then **draw**
$(3x + \text{-}5) + x + (2x + 3)$	$(3x + \text{-}5) - x - (2x + \text{-}3)$
	$(3x + 5) + \underline{\text{-}x} + \underline{(\text{-}2x + 3)}$
Write the equivalent simplified algebraic expression	**Write** the equivalent simplified algebraic expression
$6x + \text{-}2$	$0x + \text{-}2 = \text{-}2$
Say the expressions and **combine** the like terms	Write as <u>add the opposite</u> to subtract, then **draw**
$(x + 1) + (\text{-}4x + 2) + 2x$	$(x + 1) - (\text{-}4x + 2) - 2x$
	$(x + 1) + \underline{(4x + \text{-}2)} + \underline{\text{-}2x}$
Write the equivalent simplified algebraic expression	**Write** the equivalent simplified algebraic expression
$\text{-}x + 3$	$3x + \text{-}1$

Learning Target: I will expand algebraic expressions   8th Grade - Readiness Standard 4 - 7.EE.1b - Form A

1. We Do Together: Draw two ways and show.

Draw an <u>array model</u> to multiply	Draw an <u>area model</u> to multiply	Show your thinking using numbers and symbols
$+x$ $+x$ $+x$ $-$ $+$ $\boxed{x}$ $\boxed{x}$ $\boxed{x}$ $-$ $+$ $\boxed{x}$ $\boxed{x}$ $\boxed{x}$ $-$	$3x$ $+$ -1 2 $\begin{array}{c\|c} 2(3x) & 2(-1) \\ 6x & -2 \end{array}$	$2(3x-1)$ $2(3x + -1)$ $2(3x) + 2(-1)$ $6x + -2$
Draw an <u>array model</u> to multiply	Draw an <u>area model</u> to multiply	Show your thinking using numbers and symbols
$+x$ $-$ $-$ $-$ $\boxed{-x}$ $+$ $+$ $-$ $\boxed{-x}$ $+$ $+$ $-$ $\boxed{-x}$ $+$ $+$	x $+$ -2 -3 $\begin{array}{c\|c} -3(x) & -3(-2) \\ -3x & 6 \end{array}$	$-3(x-2)$ $-3(x + -2)$ $-3(x) + -3(-2)$ $-3x + 6$

2. Reflect: What questions do you have about expanding algebraic expressions?

3. You Do Together: Draw two ways and show.

Draw an <u>array model</u> to multiply	Draw an <u>area model</u> to multiply	Show your thinking using numbers and symbols
$-x$ $-x$ $+$ $+$ $+$ $+$ $\boxed{-x}$ $\boxed{-x}$ $+$ $+$ $+$ $+$ $\boxed{-x}$ $\boxed{-x}$ $+$ $+$ $+$ $+$ $\boxed{-x}$ $\boxed{-x}$ $+$ $+$ $+$	$-2x$ $+$ 3 3 $\begin{array}{c\|c} 3(-2x) & 3(3) \\ -6x & 9 \end{array}$	$3(-2x + 3)$ $3(-2x) + 3(3)$ $-6x + 9$
Draw an <u>array model</u> to multiply	Draw an <u>area model</u> to multiply	Show your thinking using numbers and symbols
$-x$ $-$ $-$ $-$ $-$ $-$ $\boxed{+x}$ $+$ $+$ $+$ $+$ $-$ $\boxed{+x}$ $+$ $+$ $+$ $+$	$-x$ $+$ -4 -2 $\begin{array}{c\|c} -2(-x) & -2(-4) \\ 2x & 8 \end{array}$	$-2(-x-4)$ $-2(-x + -4)$ $-2(-x) + -2(-4)$ $2x + 8$

Name _____   Date _____

Learning Target: I will factor linear expressions   8ᵗʰ Grade - Readiness Standard 5 - 7.EE.1c - Form A

1. We Do Together: List, circle, label, find and write.

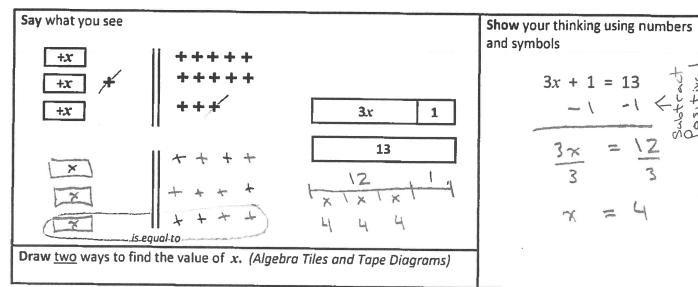| List the factors and **circle** the greatest common factor	**Label** the height as the greatest common factor and **find** the partial lengths	**Write** an equivalent expression using the greatest common factor
$\begin{array}{c\|c} 8x & 12 \\ \hline 1\cdot 8\cdot x & 1\cdot 12 \\ 2\cdot \textcircled{4}\cdot x & 2\cdot 6 \\ & 3\cdot \textcircled{4} \end{array}$	$4 \begin{array}{\|c\|c\|} \multicolumn{2}{c}{2x \qquad + \quad 3} \\ \hline 4(2x) & 4(3) \\ 8x & 12 \\ \hline \end{array}$	$8x + 12$ $$4(2x+3)$$
$\begin{array}{c\|c} 15x & -5 \\ \hline 1\cdot 15\cdot x & -1\cdot\textcircled{5} \\ 3\cdot\textcircled{5}\cdot x & 1\cdot -5 \end{array}$	$5 \begin{array}{\|c\|c\|} \multicolumn{2}{c}{x \qquad + \quad -1} \\ \hline 5(x) & 5(-1) \\ 15x & -5 \\ \hline \end{array}$	$15x - 5$ $15x + {}^-5$ $$5(3x + -1)$$

2. Reflect: What questions do you have about factoring algebraic expressions?

3. You Do Together: List, circle, label, find and write.

List the factors and **circle** the greatest common factor	**Label** the height as the greatest common factor and **find** the partial lengths	**Write** an equivalent expression using the greatest common factor
$\begin{array}{c\|c} 18x & -12 \\ \hline 1\cdot 18\cdot x & -1\cdot 12 \\ 2\cdot 9\cdot x & 1\cdot -12 \\ 3\,\textcircled{6}\cdot x & -2\cdot\textcircled{6} \\ & 2\cdot -6 \\ & -3\cdot 4 \\ & 3\cdot -4 \end{array}$	$6 \begin{array}{\|c\|c\|} \multicolumn{2}{c}{3x \qquad -2} \\ \hline 6(3x) & 6(-2) \\ 18x & -12 \\ \hline \end{array}$	$18x - 12$ $18x + {}^-12$ $$6(3x + -2)$$
$\begin{array}{c\|c} -3x & -15 \\ \hline -1\cdot 3\cdot x & -1\cdot 15 \\ 1\,\textcircled{-3}\cdot x & 1\cdot -15 \\ \textcircled{-3}\cdot 5 \\ \uparrow & 3\cdot -5 \\ \text{exception} \\ \text{to GCF} \\ \text{rule} \end{array}$	$-3 \begin{array}{\|c\|c\|} \multicolumn{2}{c}{x \qquad + \quad 5} \\ \hline -3(x) & -3(5) \\ -3x & -15 \\ \hline \end{array}$	$-3x - 15$ $-3x + {}^-15$ $$-3(x + 5)$$

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Name _____ Use Inverse Operations _____ Date _____

Learning Target: I will solve equations with more than one step   8th Grade – Readiness Standard 6 – 7.EE.4a – Form A

1. We Do Together: Say, draw, and show.

Say what you see	Show your thinking using numbers and symbols

Algebra tiles: three +x tiles, thirteen + signs; tape diagram 3x | 1 = 13; number line with x x x and 4 4 4.

$$3x + 1 = 13$$
$$-1 \quad -1 \quad \leftarrow \text{Subtract Positive 1}$$
$$\frac{3x}{3} = \frac{12}{3}$$
$$x = 4$$

Draw two ways to find the value of x. *(Algebra Tiles and Tape Diagrams)*

2. Reflect: What questions do you have about solving equations with more than one step?

3. You Do Together: Say, draw, and show.

Say what you see	Show your thinking using numbers and symbols

Algebra tiles with +x tiles; tape diagram 2x | 6 = 16; number line with x x and 5 5.

$$2(x + 3) = 16$$
$$2x + 6 = 16$$
$$-6 \quad -6 \leftarrow \text{Subtract Positive 6}$$
$$\frac{2x}{2} = \frac{10}{2}$$
$$x = 5$$

Draw two ways to find the value of x. *(Algebra Tiles and Tape Diagrams)*

Say what you see	Show your thinking using numbers and symbols

Tape diagram with 13 across top, x and 5 below; number line x x x 5 with 4 4 4.

$$13 = \frac{2}{3}x + 5$$
$$-5 \qquad -5 \leftarrow \text{Subtract Positive 5}$$
$$\frac{8}{\frac{2}{3}} = \frac{\frac{2}{3}x}{\frac{2}{3}}$$
$$8 \cdot \frac{3}{2} = 4 = x$$

Draw to find the value of x. *(Tape Diagrams)*

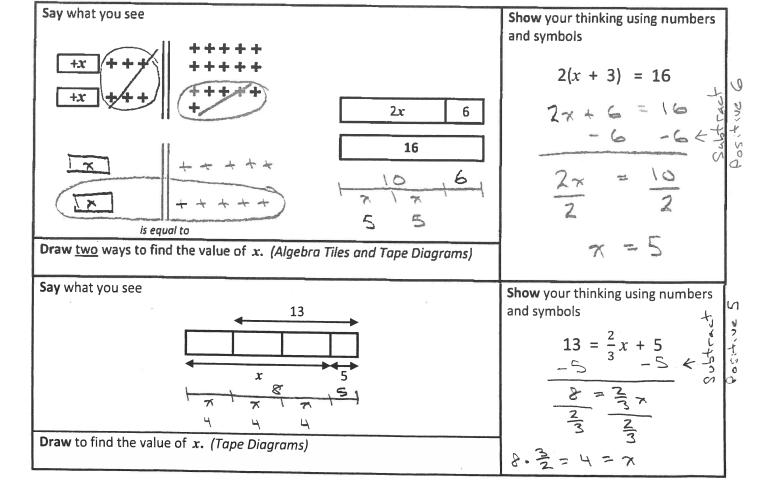Name **Use Additive Inverse and Zero Pairs** Date _____

Learning Target: I will solve equations with more than one step   8th Grade - Readiness Standard 6 - 7.EE.4a - Form A

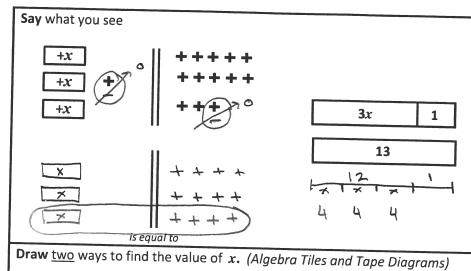### 1. We Do Together: Say, draw, and show.

Say what you see

is equal to

Draw two ways to find the value of x. (Algebra Tiles and Tape Diagrams)

3x	1

13

tape diagram: 12, 1 / 4 4 4

Show your thinking using numbers and symbols

$$3x + 1 = 13$$
$$-1 \quad -1 \quad \leftarrow \text{Add negative 1}$$
$$\frac{3x}{3} = \frac{12}{3}$$
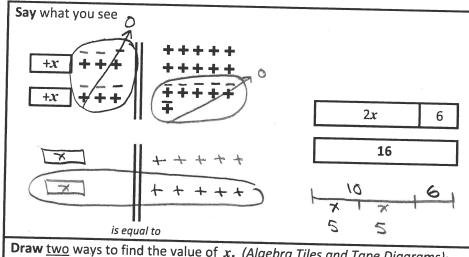$$x = 4$$

2. Reflect: What questions do you have about solving equations with more than one step?

3. You Do Together: Say, draw, and show.

Say what you see

is equal to

Draw two ways to find the value of x. (Algebra Tiles and Tape Diagrams)

2x	6

16

tape diagram: 10, 6 / 5 5

Show your thinking using numbers and symbols

$$2(x + 3) = 16$$
$$2x + 6 = 16$$
$$-6 \quad -6 \quad \leftarrow \text{Add negative 6}$$
$$\frac{2x}{2} = \frac{10}{2}$$
$$x = 5$$

Say what you see

Draw to find the value of x. (Tape Diagrams)

Show your thinking using numbers and symbols

$$13 = \frac{2}{3}x + 5$$
$$-5 \qquad\qquad -5 \leftarrow \text{Add negative 5}$$
$$\frac{8}{\frac{2}{3}} = \frac{\frac{2}{3}x}{\frac{2}{3}}$$
$$8 \cdot \frac{3}{2} = 4 = x$$