DELTA MATH

RtI PROGRAM

7th Grade
Tier 2 Intervention Lessons

Readiness Standard 5 – 6.EE.4

Learning Target: I will simplify algebraic expressions

Readiness for 6.EE.4a: Solve equations with more than one step

Table of Contents

IES Recommendations for Tier 2 and 3 intervention lessons:

2. Instructional materials for students receiving interventions should focus intensely on in-depth treatment of whole numbers in kindergarten through grade 5 and on rational numbers in grades 4 through 8. These materials should be selected by committee.	Low
3. Instruction during the intervention should be explicit and systematic. This includes providing models of proficient problem solving, verbalization of thought processes, guided practice, corrective feedback, and frequent cumulative review.	Strong
4. Interventions should include instruction on solving word problems that is based on common underlying structures.	Strong
5. Intervention materials should include opportunities for students to work with visual representations of mathematical ideas and interventionists should be proficient in the use of visual representations of mathematical ideas.	Moderate
6. Interventions at all grade levels should devote about 10 minutes in each session to building fluent retrieval of basic arithmetic facts.	Moderate
7. Monitor the progress of students receiving supplemental instruction and other students who are at risk.	Low
8. Include motivational strategies in tier 2 and tier 3 interventions.	Low

(Institute of Educational Sciences, Assisting Students Struggling with Mathematics: Response to Intervention (RtI) for Elementary and Middle Schools, 2009, p. 6)

Gradual release of responsibility model

Teacher Responsibility

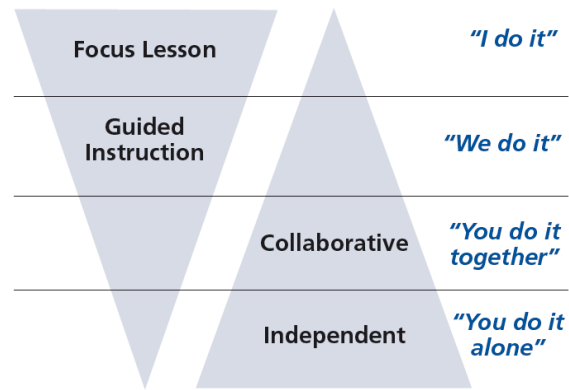|	
Focus Lesson	*"I do it"*
Guided Instruction	*"We do it"*
Collaborative	*"You do it together"*
Independent	*"You do it alone"*

Figure 1

[(Dr. Douglas Fisher, Effective Use of the Gradual Release of Responsibility Model)](#)

Planning Guide: Session 1

7th Grade – Readiness Standard 5 – 6.EE.4

Learning Target: I will simplify algebraic expressions

Readiness for solving equations with more than one step

	Recommended Actions
Beginning *(15 min.)*	Review the readiness standard with the intervention group using the **Guided Review** ○ Introduce the learning target and why it is important for future learning ○ Read each question on the Guided Review and ask students to share what they remember from the previous school year.
Middle *(5 min.)*	➤ Ask students to reflect on their progress towards the learning target ○ What did I remember about the learning target? ○ What did I learn today about the learning target? ○ How confident do I feel about doing the learning target on my own?
End *(10 min.)*	➤ Assess each student's progress using **Quick Check – Form A** ➤ Guide students to self-correct their **Quick Check – Form A** ➤ Guide students to chart their progress by recording the date and Quick Check score in their **Growth Chart** ➤ Collect each student's Quick Check and Growth Chart
After	➤ Create sub-groups to differentiate the middle of sessions 2 through 8 ○ Group 1 – Include students who did not meet the learning goal ○ Group 2 – Include students who met or exceeded the learning goal

Name_____ Date_____

Learning Target: I will simplify algebraic expressions.

1.

Find the simplified equivalent expression.

$$x + x + x$$

○ $x + 3$ ○ $3x$ ○ x^3 ○ $3x^3$

2.

Find the simplified equivalent expression.

$$6x + 2 + 3x$$

○ $6x + 5$ ○ $9x + 2$ ○ $11x^2$ ○ $11x$

3.

Find the simplified equivalent expression.

$$2(x + 3)$$

○ $2x + 6$ ○ $x + 6$ ○ $x^2 + 6$ ○ $2x + 3$

7ᵗʰ Grade Winter Guided Review

Readiness Standard 5 - 6.EE.4

Name_____ Date_____

Learning Target: I will simplify algebraic expressions.

1.

Find the simplified equivalent expression.

$$x + x + x + x$$

○ $4x^4$ ○ $x + 4$ ○ x^4 ○ $4x$

2.

Find the simplified equivalent expression.

$$4x + 3 + 2x$$

○ $6x + 3$ ○ $9x$ ○ $9x^2$ ○ $4x + 5$

3.

Find the simplified equivalent expression.

$$3(x + 4)$$

○ $3x + 4$ ○ $3x + 12$ ○ $x^3 + 7$ ○ $x + 12$

DELTA MATH — RtI PROGRAM

Name_____ Date_____

Learning Target: I will simplify algebraic expressions.

1.

Find the simplified equivalent expression.

$$x + x$$

○ $2x$ ○ $2x^2$ ○ $x + 2$ ○ x^2

2.

Find the simplified equivalent expression.

$$2x + 8 + 4x$$

○ $14x$ ○ $2x + 12$ ○ $6x + 8$ ○ $14x^2$

3.

Find the simplified equivalent expression.

$$4(x + 6)$$

○ $x^4 + 10$ ○ $4x + 24$ ○ $4x + 6$ ○ $x + 24$

Session 1: Self-Reflection

Learning Target: I will simplify algebraic expressions

Briefly discuss student responses

> ➢ What did I remember about simplifying algebraic expressions?

> ➢ What did I learn today about simplifying algebraic expressions?

> ➢ How confident do I feel about simplifying algebraic expressions on my own? *(Thumbs up, down, or sideways)*

Quick Check - Form A

7th Grade – Readiness Standard 5 – 6.EE.4

Name_____ Date_____

Learning Target: I will simplify algebraic expressions.

Directions: Write the simplified equivalent expression. (Work time: 4 minutes)

1. $x + x + x + x$	**2.** $4x + 3 + 2x$
3. $11 + 9x + 2 - 6x$	**4.** $2(x + 6)$
5. $4(x + 1) + 3x$	**6.** $4(x + 3) - 2 + x$

Growth Chart

7th Grade – Readiness Standard 5 – 6.EE.4

Name_____ Date_____

Learning Target: I will simplify algebraic expressions.

Goal: 5 out of 6 correct
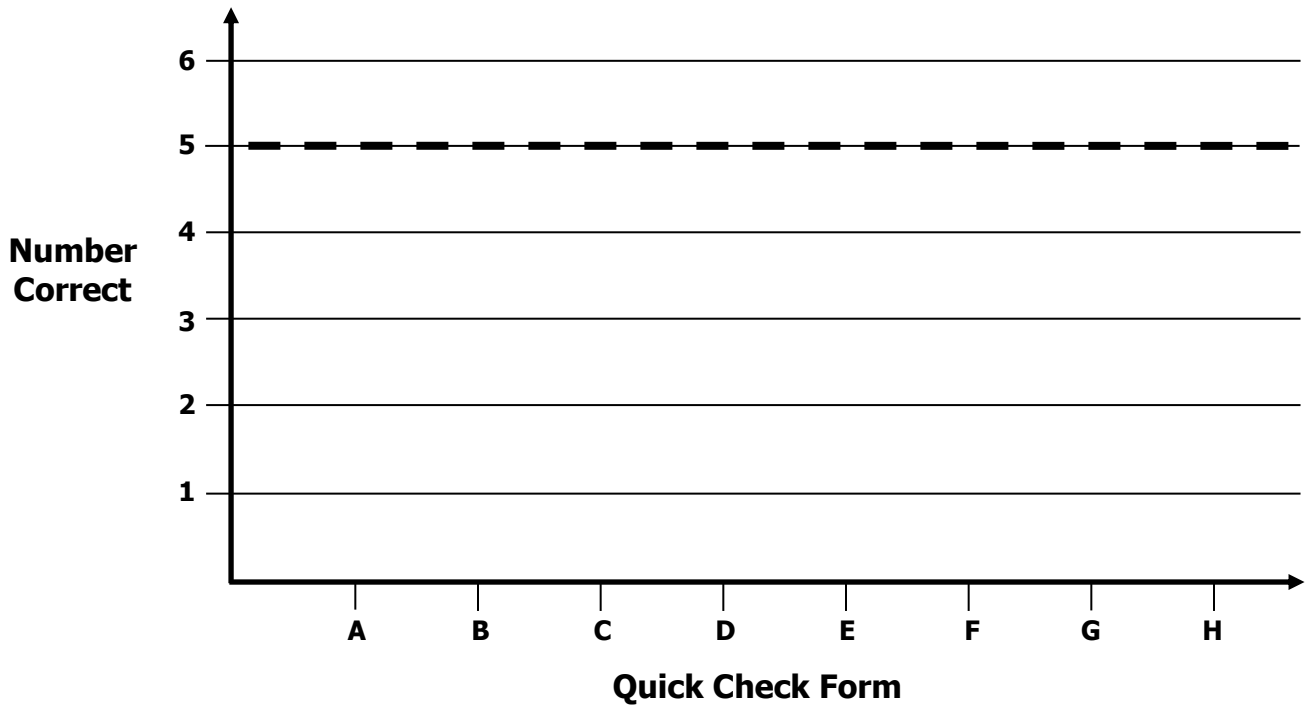
Intervention	Date	Score
Session 1:		
Session 2:		
Session 3:		
Session 4:		
Session 5:		
Session 6:		
Session 7:		
Session 8:		

Planning Guide: Sessions 2 Through 8

7th Grade – Readiness Standard 5 – 6.EE.4

Learning Target: I will simplify algebraic expressions

Readiness for solving equations with more than one step

Recommended Actions		
Beginning (5 min.)	➢ Review the learning target with the whole group and ask each student to set a goal.	
Middle (15 min.)	**Group 1:** Students who scored below the learning goal on the previous Quick Check. ➢ Model solving a word problem – "I do" ➢ Guided Practice – "We do" **Session 2:** Simplify algebraic expressions using algebra tiles. **Session 3:** Simplify algebraic expressions using drawings. **Session 4:** Simplify algebraic expressions by identifying and combining like-terms.	**Group 2:** *(Students who met the learning goal)* ➢ Independent practice – "You do alone" **Activity 1:** *"Simplifying Algebraic Expressions Match-up"* *(Look for additional activities in 6th grade core instruction resources.)*

End (10 min.)	➢ Bring the students back together.
	 ➢ Ask students to reflect on their progress towards the learning target
	     o What did I learn today about simplifying algebraic expressions?
	     o How confident do you feel about simplifying algebraic expressions on my own? (Thumbs up, down, or sideways)
	 ➢ Assess each student's progress using the next **Quick Check** form
	 ➢ Guide students to self-correct their **Quick Check**
	 ➢ Guide students to chart their progress in their **Growth Chart**
	     o If not using Delta Math lessons, record the activity in the table
	 ➢ Collect each student's **Quick Check** and **Growth Chart**	

After	➢ Regroup students to differentiate the middle of sessions 3 through 8
	     o Promote students who met the learning goal to group 2
	     o Exit students who met the learning goal for a third time
	 ➢ Problem solve with a team to plan additional support for students who did not exit	

Learning Target: I will simplify algebraic expressions

Readiness for solving equations with more than one step

Jon and his brother were planning to sell their baseball card collection. Jon has a mystery number of baseball cards and twice as many as his brother. Together they have $x + 2x$ baseball cards. What is a simplified expression equal to the total number of baseball cards that Jon and his brother have?

Learning Target: I will simplify algebraic expressions

Readiness for solving equations with more than one step

Jon and his brother were planning to sell their baseball card collection. Jon has a mystery number of baseball cards and twice as many as his brother. Together they have $x + 2x$ baseball cards. What is a simplified expression equal to the total number of baseball cards that Jon and his brother have?

Jon's Total	+	Jon's Brother's Total	=	Total Number of Cards
x	+	$2x$	=	$3x$

Note: Color-coding is provided to help the interventionist make connections between the numbers, symbols and pictures. It may also help students who struggle to make similar connections.

Learning Target: I will simplify algebraic expressions

Readiness for solving equations with more than one step

> Jon and his brother were planning to sell their baseball card collection. Jon has a mystery number of baseball cards and twice as many as his brother. Together they have $x + 2x$ baseball cards. What is a simplified expression equal to the total number of baseball cards that Jon and his brother have?

I am going to think aloud to model solving this problem.
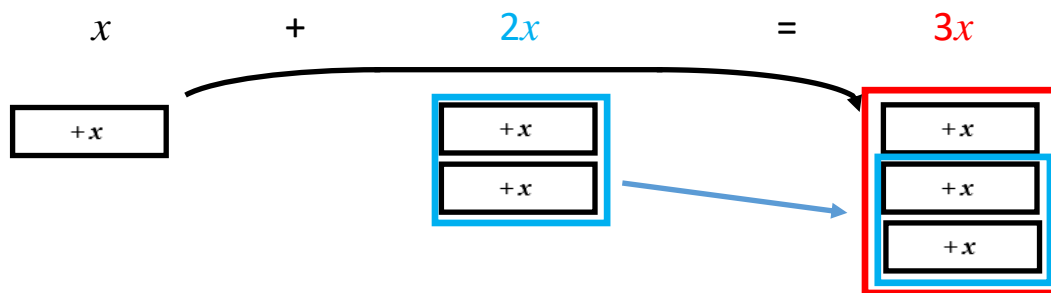
Your job is to watch, listen, think and ask questions.

First, it is important to know what the problem is about.

The problem is about Jon and his brother's baseball card collection.

Second, I need to determine what I need to find.

I need to find a simplified expression equal to the total number of baseball cards that Jon and his brother have.

Third, I need to determine what I know.

**I know Jon has a mystery number of baseball cards and twice as many as his brother.**
(Write "John's Total + Jon's Brother's Total = Total Number of Cards".)

I also know that altogether they have $x + 2x$ baseball cards.
(Write "x + 2x .)

Fourth, I need to figure out what I can try.

I am going to use algebra tiles to help me build the original algebraic expression and then find a simplified expression that is equivalent to the original.
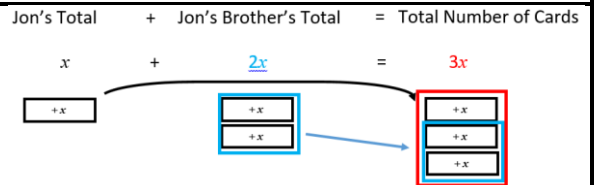
I will represent the mystery number that Jon has using an "+x" tile and since Jon's brother has twice as many cards…I will use 2 "+x" tiles to represent that number.
(Place 1 "+x" tile below the term "x" and 2 "+x" tiles below the term "$2x$".)

Next, since all of the tiles have the same value, I can combine them as a group of 3 x's.
(Move all of the x's into a single group and write "= 3x" next to the original expression.)

Last, I need to make sure that my answer makes sense.

I found that together Jon and his brother have a total of 3x baseball cards. This makes sense because I modeled the situation using algebra tiles and then combined the x tiles to make a "simpler" expression.

Session 2: Guided Practice (We Do)

Materials:

➢ Algebra Tiles (1 set on p. 13: 20 +1s and 16 +x's per student)

➢ Equation mat (1 per student)

We Do Together: (Teacher Actions)

➢ Say, build and simplify each algebraic expression.

(Both partners build the original expression and only one rearranges their tiles to simplify the expression.)

1. $2x + 4 + 3x$ 	**2.** $x^2 + 3x + 4 + x - 3$
3. $2(x + 3)$ 	**4.** $2(x^2 + 3) + x^2 + 4x - 1$

Session 2: Guided Practice (We Do - Continued)

You Do Together: (As a class, or in small groups)

➢ Students take turns leading to simplify each algebraic expression.

5. $2x + 4 + 3x + 2 + x - 1$	**6.** $x^2 + 2x + 4 + x + 1 + 3x^2$
7. $3(x + 4)$	**8.** $3(x^2 + 2x + 4)$
9. $2(3x^2 + 5) + 2x^2 + 4x - 2$	**10.** $2(x^2 + 2x + 1) + 3(x^2 + x + 2)$

Learning Target: I will simplify algebraic expressions
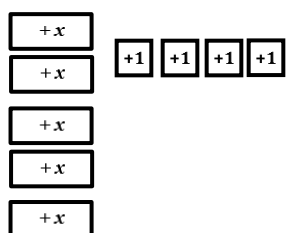
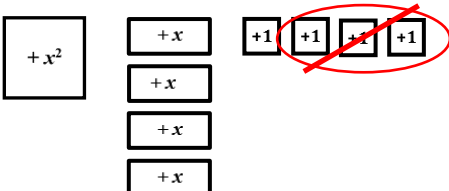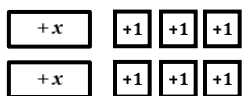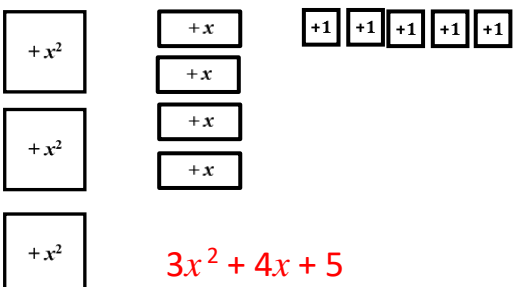# Session 2: Guided Practice (We Do – Teacher Notes)

Materials:

➢ Algebra Tiles (1 set on p. 13: 20 +1s and 16 +x's per student)

➢ Expression mat (1 per student)
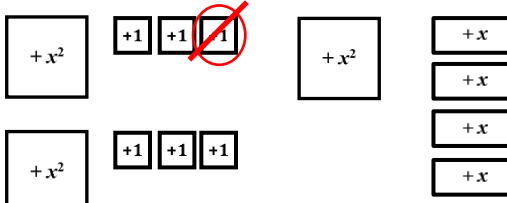
We Do Together: (Teacher Actions)

➢ Say, build and work in pairs to simplify each algebraic expression.

(Both partners build the original expression and only one rearranges their tiles to simplify the expression.)

1.

$$2x + 4 + 3x$$

| +x |
| +x | +1 +1 +1 +1
| +x |
| +x |
| +x |

$5x + 4$

2.

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

+x^2 +x +1 +1 +1 +1
         +x
         +x
         +x

$x^2 + 4x + 1$

3.

$$2(x + 3)$$

+x +1 +1 +1
+x +1 +1 +1

$2x + 6$

4.

$$2(x^2 + 3) + x^2 + 4x - 1$$

+x^2 +x +1 +1 +1 +1 +1
         +x
+x^2 +x
         +x
+x^2

$3x^2 + 4x + 5$

Build 2 groups of "x^2 + 3", 3 "x^{2}s", and 4 "xs"
then take away 2 "+1" tiles

Problem 4
Original Expression

+x^2 +1 +1 +1   +x^2 +x
                              +x
+x^2 +1 +1 +1   +x
                              +x

Algebra Tiles (2 sets of positive tiles)

7th Grade - Readiness Standards 3, 4, 5 and 6 – 6.EE.2a, 6.EE.2c, 6.EE.4, 6.EE.7

Directions: Provide each student one set of positive tiles.

+1	+1	+1	+1	+1	$+x$	$+x$	$+x$	$+x$
+1	+1	+1	+1	+1	$+x$	$+x$	$+x$	$+x$
+1	+1	+1	+1	+1	$+x$	$+x$	$+x$	$+x$
+1	+1	+1	+1	+1	$+x$	$+x$	$+x$	$+x$

$+x^2$	$+x^2$	$+x^2$	$+x^2$	$+x^2$	$+x^2$
$+x^2$	$+x^2$	$+x^2$	$+x^2$	$+x^2$	$+x^2$

+1	+1	+1	+1	+1	$+x$	$+x$	$+x$	$+x$
+1	+1	+1	+1	+1	$+x$	$+x$	$+x$	$+x$
+1	+1	+1	+1	+1	$+x$	$+x$	$+x$	$+x$
+1	+1	+1	+1	+1	$+x$	$+x$	$+x$	$+x$

$+x^2$	$+x^2$	$+x^2$	$+x^2$	$+x^2$	$+x^2$
$+x^2$	$+x^2$	$+x^2$	$+x^2$	$+x^2$	$+x^2$

Modeling & Guided Practice Cards

7th Grade – Readiness Standard 5 – 6.EE.4

Use for Problem 1 $2x + 4 + 3x$	Use for Problem 2 $x^2 + 3x + 4 + x - 3$
Use for Problem 3 $2(x + 3)$	Use for Problem 4 $2(x^2 + 3) + x^2 + 4x - 1$
Use for Problem 5 $2x + 4 + 3x + 2 + x - 1$	Use for Problem 6 $x^2 + 2x + 4 + x + 1 + 3x^2$
Use for Problem 7 $3(x + 4)$	Use for Problem 8 $3(x^2 + 2x + 4)$
Use for Problem 9 $2(3x^2 + 5) + 2x^2 + 4x - 2$	Use for Problem 10 $2(x^2 + 2x + 1) + 3(x^2 + x + 2)$
Use for Modelling $x + 2x + 3x$	

Learning Target: I will simplify algebraic expressions

Briefly discuss student responses

➢ What did I learn today about simplifying algebraic expressions?

➢ How confident do I feel about simplifying algebraic expressions on my own? *(Thumbs up, down, or sideways)*

Quick Check - Form B

Name_____ Date_____

Learning Target: I will simplify algebraic expressions.

Directions: Write the simplified equivalent expression. (Work time: 4 minutes)

1. $x + x + x$	**2.** $9x + 6 + x$
3. $8x + 4 - 2x + 6$	**4.** $4(x + 3)$
5. $5x + 6(x + 1)$	**6.** $4 + 5(x + 3) - 2x$

Learning Target: I will simplify algebraic expressions

Readiness for solving equations with more than one step

Sally scored 6 more than a mystery number points during last night's basketball game. Alexis scored 1 more than twice the mystery number of points during the same game. Together they scored $x + 6 + 2x + 1$ points during the game. What is a simplified expression equal to the total number of points they scored?

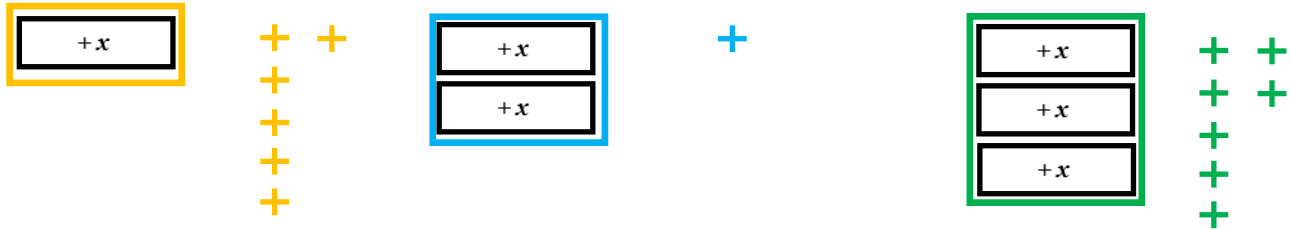# Session 3: Modeling (I Do – Visual Support)

Learning Target: I will simplify algebraic expressions

Readiness for solving equations with more than one step

Sally scored 6 more than a mystery number points during last night's basketball game. Alexis scored 1 more than twice the mystery number of points during the same game. Together they scored $x + 6 + 2x + 1$ points during the game. What is a simplified expression equal to the total number of points they scored?

Sally's Total   +   Alexis' Total   = Total Number of Points

x +   6   + $2x$ +   1   = $3x$ +   7

Note: Color-coding is provided to help the interventionist make connections between the numbers, symbols and pictures. It may also help students who struggle to make similar connections.

Learning Target: I will simplify algebraic expressions

Readiness for solving equations with more than one step

> Sally scored 6 more than a mystery number points during last night's basketball game. Alexis scored 1 more than twice the mystery number of points during the same game. Together they scored $x + 6 + 2x + 1$ points during the game. What is a simplified expression equal to the total number of points they scored?

I am going to think aloud to model solving this problem.

Your job is to watch, listen, think and ask questions.

First, it is important to know what the problem is about.

The problem is about Sally and Alexis playing in last night's basketball game.

Second, I need to determine what I need to find.

I need to find a simplified expression equal to the total number of points they scored.

Third, I need to determine what I know.

I know Sally scored $x + 6$ points and Alexis scored $2x + 1$ points.
(Write "Sally's Total + Alexis' Total = Total Number of Points".)

And together they scored $x + 6 + 2x + 1$ points.
(Write "$x + 6 + 2x + 1$" below the labels.)

Fourth, I need to figure out what I can try.

I am going to use a math drawing to help me model this situation.

I will draw an "+x tile" and 6 "plus signs" to represent Sally's total…
(Draw the "+x" and "plus signs" below each term for Sally.)

And 2 "+x tiles" and 1 "plus sign" to represent Alexis' total.
(Draw the "+x" and "plus signs" below each term for Alexis.)

Now, I will count the total number of "+x tiles" and draw them as a group…1…2…3 +x's.
(Point to each "+x tile" as you count…then draw 3 +x tiles under the label for the total.)

Next, I will count the number of "plus signs" and draw them as a group…6 and 1 is equal to 7.
(Point to the 6 plus signs for Sally and then the 1 for Alexis…then draw 7 plus signs below the label for the total.)

The simplified expression $x + 6 + 2x + 1$ is equal to $3x + 7$.
(Point to the math drawings under the total.)

Sally's Total   +   Alexis' Total   = Total Number of Points

x +   6   + $2x$ +   1   = $3x$ +   7

Last, I need to make sure that my answer makes sense.

I found that Sally and Alexis made a total of $3x + 7$ points. This makes sense because I modeled the situation using a math drawing and then totaled the "like" tiles to make a "simpler" expression.
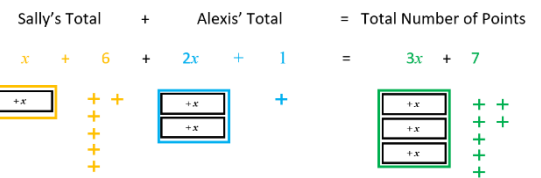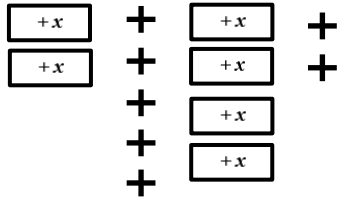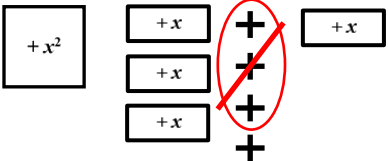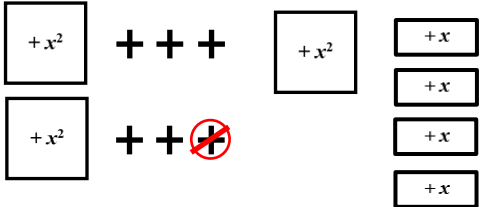
Learning Target: I will simplify algebraic expressions   7th Grade - RS 5 - 6.EE.4

Session 3: Guided Practice (We Do)

We Do Together: (Teacher Actions)

➢ Say, draw, and simplify each algebraic expression.

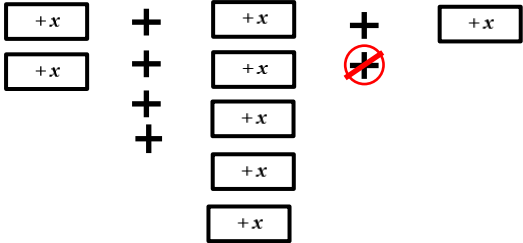| Not Simplified	Simplified
1. $2x + 5 + 4x + 2$ 	
2. $x^2 + 3x + 4 + x - 3$ 	
3. $2(x^2 + 3) + x^2 + 4x - 1$ 	

Learning Target: I will simplify algebraic expressions

Session 3: Guided Practice (We Do - Continued)

You Do Together: (As a class, or in small groups)

➢ Students take turns leading to simplify each algebraic expression.

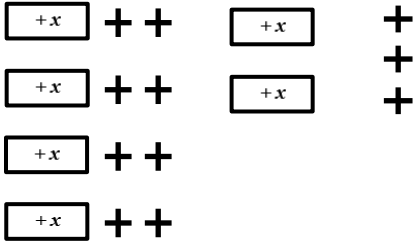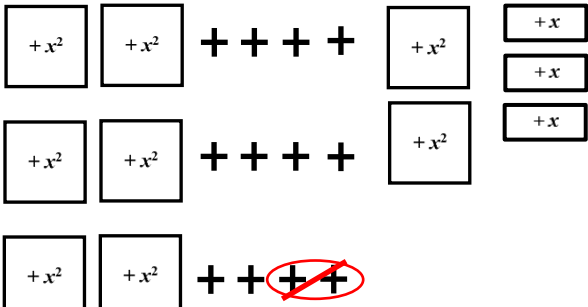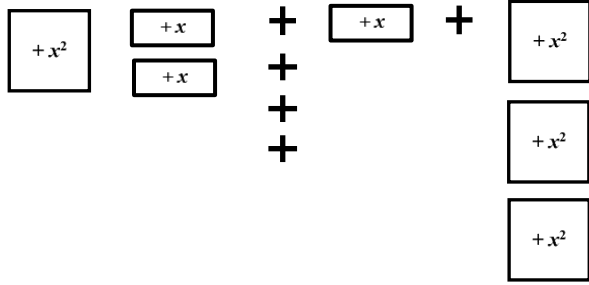| Not Simplified	Simplified
4. $2x + 4 + 5x + 2 + x - 1$	
5. $4(x + 2) + 2x + 3$	
6. $3(2x^2 + 4) + 2x^2 + 3x - 2$	

Learning Target: I will simplify algebraic expressions ⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀ 7th Grade - RS 5 - 6.EE.4

Session 3: Guided Practice (We Do - Continued)

You Do Together: (As a class, or in small groups)

➤ Students take turns leading to simplify each algebraic expression.

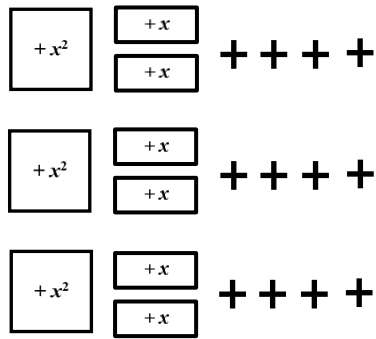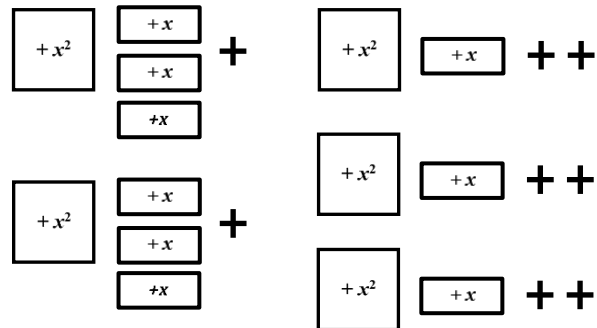| Not Simplified	Simplified
7. $x^2 + 2x + 4 + x + 1 + 3x^2$ $+x^2$ ⠀ $+x$ ⠀ $\mathbf{+}$ ⠀ $+x$ ⠀ $\mathbf{+}$ ⠀ $+x^2$ ⠀⠀⠀⠀ $+x$ ⠀ $\mathbf{+}$ ⠀⠀⠀⠀⠀⠀⠀⠀⠀ $\mathbf{+}$ ⠀⠀⠀⠀⠀⠀⠀⠀⠀ $\mathbf{+}$ ⠀ $+x^2$ ⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀ $+x^2$	
8. $3(x^2 + 2x + 4)$ $+x^2$ ⠀ $+x$ / $+x$ ⠀ $\mathbf{+ + + +}$ $+x^2$ ⠀ $+x$ / $+x$ ⠀ $\mathbf{+ + + +}$ $+x^2$ ⠀ $+x$ / $+x$ ⠀ $\mathbf{+ + + +}$	
9. $2(x^2 + 3x + 1) + 3(x^2 + x + 2)$ $+x^2$ ⠀ $+x$/$+x$/$+x$ ⠀ $\mathbf{+}$ ⠀ $+x^2$ ⠀ $+x$ ⠀ $\mathbf{+ +}$ ⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀ $+x^2$ ⠀ $+x$ ⠀ $\mathbf{+ +}$ $+x^2$ ⠀ $+x$/$+x$/$+x$ ⠀ $\mathbf{+}$ ⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀⠀ $+x^2$ ⠀ $+x$ ⠀ $\mathbf{+ +}$	
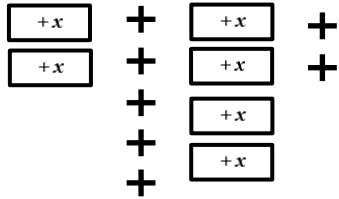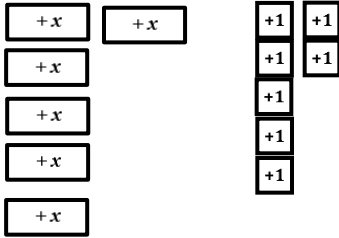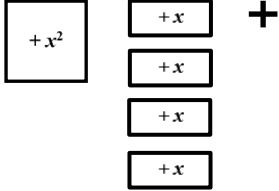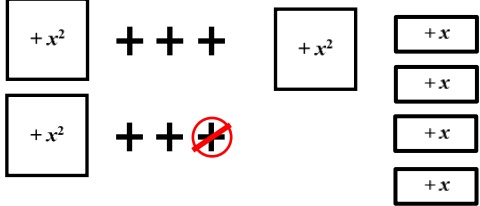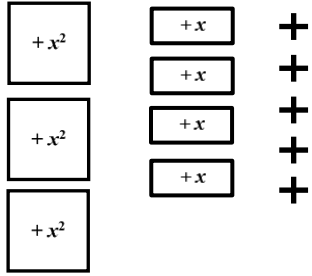
Learning Target: I will simplify algebraic expressions   7th Grade - RS 5 - 6.EE.4

Session 3: Guided Practice (We Do – Teacher Notes)

We Do Together: (Teacher Actions)

➢   Say, draw, and simplify each algebraic expression.

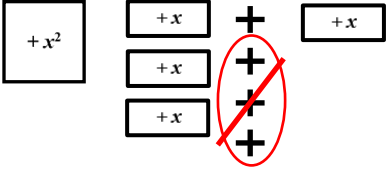| Not Simplified	Simplified
1. $2x + 5 + 4x + 2$	$6x + 7$
2. $x^2 + 3x + 4 + x - 3$	$x^2 + 4x + 1$
3. $2(x^2 + 3) + x^2 + 4x - 1$	$3x^2 + 4x + 5$

Learning Target: I will simplify algebraic expressions

Briefly discuss student responses

> ➢ What did I learn today about simplifying algebraic expressions?

> ➢ How confident do I feel about simplifying algebraic expressions on my own? *(Thumbs up, down, or sideways)*

Quick Check - Form C

Name_____ Date_____

Learning Target: I will simplify algebraic expressions.

Directions: Write the simplified equivalent expression. (Work time: 4 minutes)

1. $x + x + x + x + x$	**2.** $4x + 3x + 2$
3. $4x + 6 - 2x + 3$	**4.** $5(x + 5)$
5. $7(x + 2) - 5x$	**6.** $x + 3(x + 1) - 2$

Learning Target: I will simplify algebraic expressions

Readiness for solving equations with more than one step

Pete and Nolan both ate cookies at their school party. Pete ate 5 more than a mystery number of cookies and Nolan ate 1 less than twice the same mystery number of cookies. Together they ate $x + 5 + 2x - 1$ cookies at their school party. What is a simplified expression equal to the total number of cookies they ate at the party?

Learning Target: I will simplify algebraic expressions

Readiness for solving equations with more than one step

Pete and Nolan both ate cookies at their school party. Pete ate 5 more than a mystery number of cookies and Nolan ate 1 less than twice the same mystery number of cookies. Together they ate $x + 5 + 2x - 1$ cookies at their school party. What is a simplified expression equal to the total number of cookies they ate at the party?

Pete's Total + Nolan's Total = Total Number of Cookies

$$\underline{x} \quad + \quad \underline{\underline{5}} \quad + \quad \underline{2x} \quad - \quad \underline{\underline{1}} \quad = \quad x + 2x + 5 - 1$$

$$= \quad 3x \quad + \quad 4$$

Learning Target: I will simplify algebraic expressions

Readiness for solving equations with more than one step

> Pete and Nolan both ate cookies at their school party. Pete ate 5 more than a mystery number of cookies and Nolan ate 1 less than twice the same mystery number of cookies. Together they ate $x + 5 + 2x - 1$ cookies at their school party. What is a simplified expression equal to the total number of cookies they ate at the party?

First, it is important to know what the problem is about.

This problem is about Pete and Nolan eating cookies.

Second, I need to determine what I need to find.

I need to find a simplified expression equal to the total number of cookies they ate.

Third, I need to determine what I know.

I know that Pete ate 5 more than a mystery number of cookies and Nolan ate 1 less than twice the same mystery number of cookies.
(Write "Pete's Total + Nolan's Total = Total Number of Cookies".)

And…together they ate $x + 5 + 2x - 1$ cookies.
(Write the expression below the labels.)

Fourth, I need to figure out what I can try.

This time, I am going to try using my understanding of combining like terms to help me simplify the expression…

Pete's Total	+	Nolan's Total	=	Simplified Expression
$\underline{x}$ + $\underline{\underline{5}}$	+	$\underline{2x}$ − $\underline{\underline{1}}$	=	$x + 2x + 5 - 1$
			=	$3x + 4$

"x" and "$2x$" are like terms and I remember when we used tiles and drawings that we could combine them…
(Underline the "x" and "$2x$"…then write them on the right side of the equal sign.)

The terms "5" and "1" are also like terms and can be combined…but don't forget we are subtracting the "1".
(Double underline the "5" and "1"…then write them on the right side of the equal sign.)

When I add the "x" and "$2x$"…I end up with "$3x$'s".
(Write two number bonds and "$3x$".)

When I subtract "1" from "5"…I end up with "4".
(Write two number bonds and "4".)

$3x + 4$ is the simplified expression equal to $x + 5 + 2x - 1$.
(Write the last equal sign.)

Last, I need to make sure that my answer makes sense.

I found that Pete and Nolan ate $3x + 4$ cookies at the party. This makes sense because I visualized using algebra tiles to help me combine like terms to simplify the original algebraic expression.

Session 4: Guided Practice (We Do)

We Do Together: (Teacher Actions)

➢ Simplify each algebraic expression.

Not Simplified	Simplified
1. $2x + 7 + x + 2$	
2. $x^2 + 5x + 9 + x - 2$	
3. $3(x^2 + 5) + 1$	
4. $2(x^2 + 3) + 3x^2 + 7x - 1$	

Learning Target: I will simplify algebraic expressions   7th Grade - RS 5 - 6.EE.4

Session 4: Guided Practice (We Do - Continued)

You Do Together: (As a class, or in small groups)

➤ Students take turns leading to simplify each algebraic expression.

Not Simplified	Simplified
5. $5x + 3 + 5x + 9 + x - 1$	
6. $7(x + 6) + 3x + 8$	
7. $5(2x^2 + 9) + 4x^2 + 8x - 5$	
8. $8(2x^2 + 7) + 3x^2 + 6x - 4$	

Learning Target: I will simplify algebraic expressions

Session 4: Guided Practice (We Do - Continued)

You Do Together: (As a class, or in small groups)

➢ Students take turns leading to simplify each algebraic expression.

Not Simplified	Simplified
9. $x^2 + 5x + 9 + x + 1 + 4x^2$	
10. $7(x^2 + 3x + 6) - 10$	
11. $3(x^2 + 4x + 1) + 4(2x^2 + x + 3)$	
12. $5(4x^2 + x + 1) + 2(x^2 + 7x + 3)$	

Learning Target: I will simplify algebraic expressions   7th Grade - RS 5 - 6.EE.4

Session 4: Guided Practice (We Do – Teacher Notes)

➤ Simplify each algebraic expression.

Not Simplified	Simplified
1. $2x + 7 + x + 2$	$2x + x + 7 + 2$ $3x + 9$
2. $x^2 + 5x + 9 + x - 2$	$x^2 + 5x + x + 9 - 2$ $x^2 + 6x + 7$
3. $3(x^2 + 5) + 1$	$3 \cdot x^2 + 3 \cdot 5 + 1$ $3x^2 + 15 + 1$ $3x^2 + 16$
4. $2(x^2 + 3) + 3x^2 + 7x - 1$ $2 \cdot x^2 + 2 \cdot 3 + 3x^2 + 7x - 1$	$2x^2 + 6 + 3x^2 + 7x - 1$ $2x^2 + 3x^2 + 7x + 6 - 1$ $5x^2 + 7x + 5$

Learning Target: I will simplify algebraic expressions

Briefly discuss student responses

➢ What did I learn today about simplifying algebraic expressions?

➢ How confident do I feel about simplifying algebraic expressions on my own? *(Thumbs up, down, or sideways)*

Quick Check - Form D

Name_____ Date_____

Learning Target: I will simplify algebraic expressions.

Directions: Write the simplified equivalent expression. (Work time: 4 minutes)

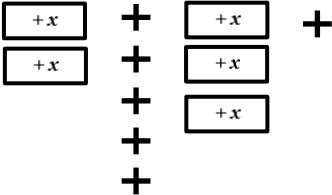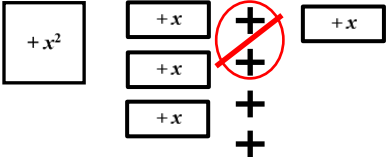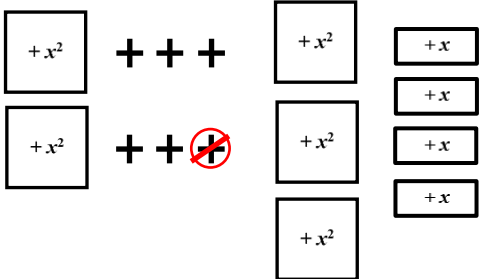|	
1. $x + x + x + x$	**2.** $5x + 6x + 10$
3. $3 + 9x - 6x + 4$	**4.** $6(x + 7)$
5. $4x + 2(x + 1)$	**6.** $4(x + 2) - 3 + x$

Learning Target: I will simplify algebraic expressions   7th Grade - RS 5 - 6.EE.4

Session 5: Guided Practice (We Do)

We Do Together: (Teacher Actions)

➢ Say, draw, and simplify each algebraic expression.

Not Simplified	Simplified
1. $2x + 5 + 3x + 1$	
2. $x^2 + 3x + 4 + x - 2$	
3. $2(x^2 + 3) + 3x^2 + 4x - 1$	

Learning Target: I will simplify algebraic expressions   7th Grade - RS 5 - 6.EE.4

Session 5: Guided Practice (We Do - Continued)

You Do Together: (As a class, or in small groups)

➢ Students take turns leading to simplify each algebraic expression.

Not Simplified	Simplified
4. $2x + 4 + 6x + 2 + x - 3$	
5. $3(x + 2) + 2x + 3$	
6. $2(2x^2 + 4) + 2x^2 + 3x - 1$	

Session 5: Guided Practice (We Do - Continued)

You Do Together: (As a class, or in small groups)

➢ Students take turns leading to simplify each algebraic expression.

Not Simplified	Simplified
7. $x^2 + 4x + 2 + x + 1 + 3x^2$	
8. $3(x^2 + 2x + 5)$	
9. $2(x^2 + 3x + 2) + 3(x^2 + x + 4)$	

Learning Target: I will simplify algebraic expressions

Briefly discuss student responses

> What did I learn today about simplifying algebraic expressions?

> How confident do I feel about simplifying algebraic expressions on my own? *(Thumbs up, down, or sideways)*

Name_____ Date_____

Learning Target: I will simplify algebraic expressions.

Directions: Write the simplified equivalent expression. (Work time: 4 minutes)

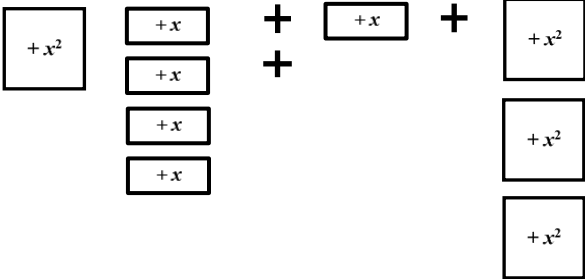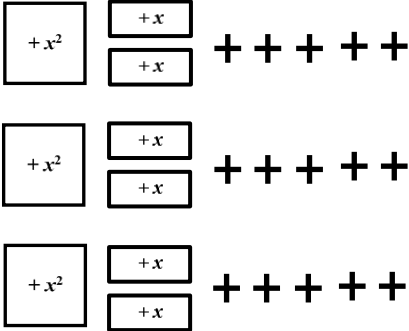|	
1. $x + x + x + x$	**2.** $4x + 3 + 2x$
3. $11 + 9x + 2 - 6x$	**4.** $2(x + 6)$
5. $4(x + 1) + 3x$	**6.** $4(x + 3) - 2 + x$

Learning Target: I will simplify algebraic expressions

7th Grade - RS 5 - 6.EE.4

Session 6: Guided Practice (We Do)

We Do Together: (Teacher Actions)

➢ Say, draw, and simplify each algebraic expression.

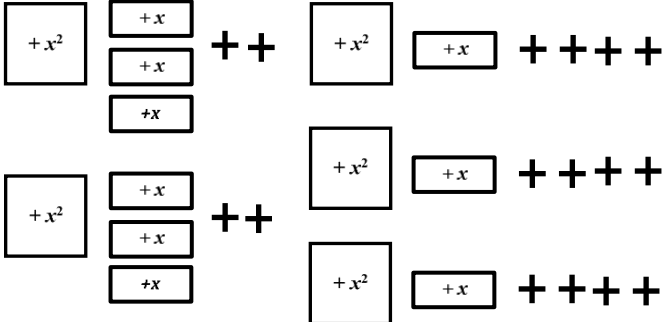| Not Simplified	Simplified
1. $3x + 5 + 4x + 2$ 	
2. $2x^2 + 3x + 4 + x - 3$ 	
3. $2(x^2 + 3) + x^2 + 4x - 2$ 	

Learning Target: I will simplify algebraic expressions   7th Grade - RS 5 - 6.EE.4

Session 6: Guided Practice (We Do - Continued)

You Do Together: (As a class, or in small groups)

➢ Students take turns leading to simplify each algebraic expression.

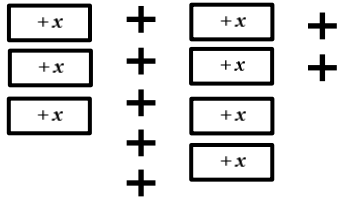| Not Simplified	Simplified
4. $2x + 3 + 4x + 2 + x - 1$	
5. $5(x + 2) + 2x + 4$	
6. $3(2x^2 + 5) + x^2 + 3x - 2$	
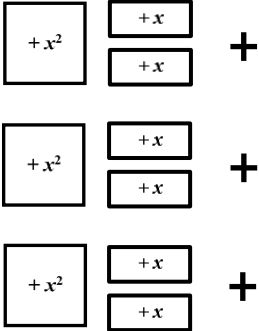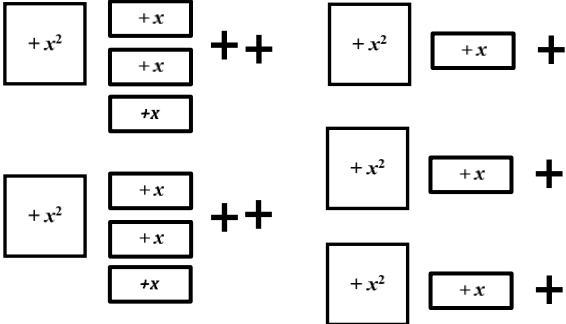
Learning Target: I will simplify algebraic expressions   7th Grade - RS 5 - 6.EE.4

Session 6: Guided Practice (We Do - Continued)

You Do Together: (As a class, or in small groups)

➢ Students take turns leading to simplify each algebraic expression.

Not Simplified	Simplified
7. $2x^2 + 3x + 4 + x + 1 + 3x^2$	
8. $3(x^2 + 2x + 1)$	
9. $2(x^2 + 3x + 2) + 3(x^2 + x + 1)$	

Learning Target: I will simplify algebraic expressions

Briefly discuss student responses

> What did I learn today about simplifying algebraic expressions?

> How confident do I feel about simplifying algebraic expressions on my own? *(Thumbs up, down, or sideways)*

Name_____ Date_____

Learning Target: I will simplify algebraic expressions.

Directions: Write the simplified equivalent expression. (Work time: 4 minutes)

1. $x + x + x$	**2.** $9x + 6 + x$
3. $8x + 4 - 2x + 6$	**4.** $4(x + 3)$
5. $5x + 6(x + 1)$	**6.** $4 + 5(x + 3) - 2x$

Session 7: Guided Practice (We Do)

We Do Together: (Teacher Actions)

➢ Simplify each algebraic expression.

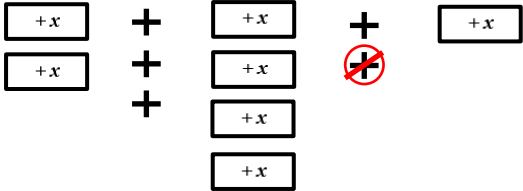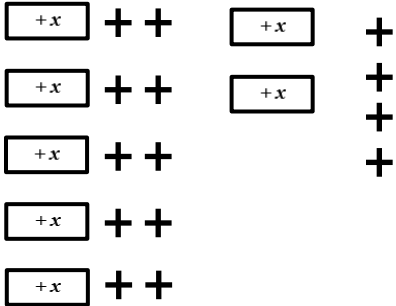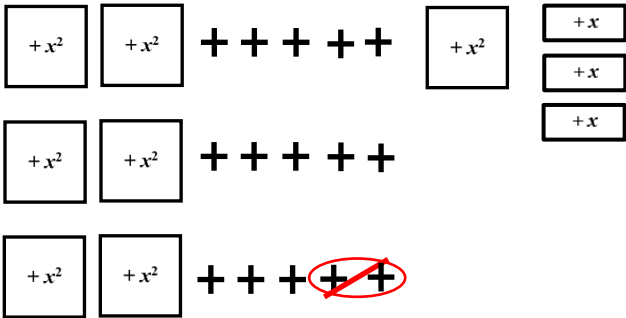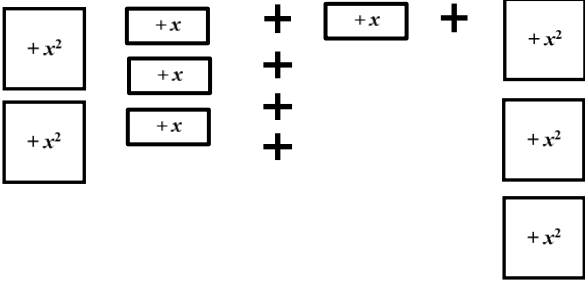| Not Simplified	Simplified
1. $4x + 7 + x + 2$	
2. $x^2 + 7x + 9 + x - 2$	
3. $6(x^2 + 5) + 1$	
4. $3(x^2 + 7) + 5x^2 + 9x - 1$	

Learning Target: I will simplify algebraic expressions   7th Grade - RS 5 - 6.EE.4

Session 7: Guided Practice (We Do - Continued)

You Do Together: (As a class, or in small groups)

➢ Students take turns leading to simplify each algebraic expression.

Not Simplified	Simplified
5. $2x + 3 + 8x + 7 + x - 1$	
6. $7(x + 8) + 3x + 6$	
7. $3(2x^2 + 7) + 5x^2 + 8x - 4$	
8. $9(2x^2 + 8) + 4x^2 + 6x - 3$	

Session 7: Guided Practice (We Do - Continued)

You Do Together: (As a class, or in small groups)

➢ Students take turns leading to simplify each algebraic expression.

Not Simplified	Simplified
9. $x^2 + 4x + 7 + x + 1 + 5x^2$	
10. $6(x^2 + 7x + 8) - 10$	
11. $9(x^2 + 4x + 1) + 8(2x^2 + x + 7)$	
12. $3(7x^2 + x + 1) + 5(x^2 + 6x + 9)$	

Learning Target: I will simplify algebraic expressions

Briefly discuss student responses

> ➢ What did I learn today about simplifying algebraic expressions?

> ➢ How confident do I feel about simplifying algebraic expressions on my own? *(Thumbs up, down, or sideways)*

Quick Check - Form G

7th Grade – Readiness Standard 5 – 6.EE.4

Name_____ Date_____

Learning Target: I will simplify algebraic expressions.

Directions: Write the simplified equivalent expression. (Work time: 4 minutes)

1. $x + x + x + x + x$	**2.** $4x + 3x + 2$
3. $4x + 6 - 2x + 3$	**4.** $5(x + 5)$
5. $7(x + 2) - 5x$	**6.** $x + 3(x + 1) - 2$

Learning Target: I will simplify algebraic expressions   7th Grade - RS 5 - 6.EE.4

Session 8: Guided Practice (We Do)

We Do Together: (Teacher Actions)

➢ Simplify each algebraic expression.

Not Simplified	Simplified
1. $2x + 9 + x + 2$	
2. $x^2 + 5x + 8 + x - 2$	
3. $7(x^2 + 6) + 1$	
4. $2(x^2 + 3) + 4x^2 + 7x - 1$	

Learning Target: I will simplify algebraic expressions   7th Grade - RS 5 - 6.EE.4

Session 8: Guided Practice (We Do - Continued)

You Do Together: (As a class, or in small groups)

  ➢ Students take turns leading to simplify each algebraic expression.

Not Simplified	Simplified
5. $3x + 8 + 5x + 9 + x - 1$	
6. $7(x + 9) + 2x + 5$	
7. $9(2x^2 + 7) + 4x^2 + 8x - 5$	
8. $8(2x^2 + 7) + 5x^2 + x - 4$	

Learning Target: I will simplify algebraic expressions   7th Grade - RS 5 - 6.EE.4

Session 8: Guided Practice (We Do - Continued)

You Do Together: (As a class, or in small groups)

➤ Students take turns leading to simplify each algebraic expression.

Not Simplified	Simplified
9. $x^2 + 5x + 9 + x + 1 + 6x^2$	
10. $7(x^2 + 3x + 6) - 2$	
11. $3(x^2 + 9x + 1) + 7(2x^2 + x + 3)$	
12. $6(4x^2 + x + 1) + 8(x^2 + 7x + 3)$	

Learning Target: I will simplify algebraic expressions

Briefly discuss student responses

> ➤ What did I learn today about simplifying algebraic expressions?

> ➤ How confident do I feel about simplifying algebraic expressions on my own? *(Thumbs up, down, or sideways)*

Quick Check - Form H

Name_____ Date_____

Learning Target: I will simplify algebraic expressions.

Directions: Write the simplified equivalent expression. (Work time: 4 minutes)

1. $x + x + x + x$	**2.** $5x + 6x + 10$
3. $3 + 9x - 6x + 4$	**4.** $6(x + 7)$
5. $4x + 2(x + 1)$	**6.** $4(x + 2) - 3 + x$

Independent Practice (You Do)

7th Grade - Readiness Standard 5 – 6.EE.4

Learning Target: I will evaluate algebraic expressions

Readiness for solving equations with more than one step

Title of Game: Play "**Simplifying Algebraic Expressions Match-up**!"

Number of Players: 2

Objective: To match all of your **"Problem"** cards to the equivalent **"Answer"** cards.

Materials:

➢ 1 set of **Problem** and **Answer** cards per group

➢ 1 recording sheet per player

Set-up:

➢ Deal all 10 **Problem** cards face down in a row.

➢ Deal 5 **Answer** cards face up to each player.

Directions:

➢ **Player 1** goes first
  o Take a card from the row of face down **Problem** cards and turn it face up
  o Write the problem on the recording sheet
  o And, find the answer in simplest form

➢ If **Player 1** has the **Answer** card, place it face up on top of the **Problem** card, take both cards and say:

"The like-terms in the expression are ___."

➢ If **Player 1** does not have the answer to the **Problem** card, turn the **Problem** card back over.

➢ **Players 1 and 2** alternate turns. The **winner** is the first player to match all 5 of their cards.

Problem Cards (Set A)

7th Grade - Readiness Standard 5 – 6.EE.4

Storage Suggestions: Copy the **Problem (Set A)** cards and **Answer (Set A)** cards in two different colors.
Store 1 set of each in a sealable bag for each pair of students.

Set A₁

$3x + 5 + x + 1$ Set A	$3x + 5 + x - 1$ Set A		
$x^2 + 5x + 3 + x^2 - 1$ Set A	$x^2 + 5x + 3 - x^2 + 1$ Set A	$x^2 + 5x + 3 + x^2 + 1$ Set A	$x^2 + 5x + 3 - x^2 - 1$ Set A
$3(x + 5) + x - 1$ Set A	$3(x + 5) - x + 1$ Set A	$5(x + 3) + x - 1$ Set A	$5(x + 3) - x + 1$ Set A

Set A₂

$3x + 5 + x + 1$ Set A	$3x + 5 + x - 1$ Set A		
$x^2 + 5x + 3 + x^2 - 1$ Set A	$x^2 + 5x + 3 - x^2 + 1$ Set A	$x^2 + 5x + 3 + x^2 + 1$ Set A	$x^2 + 5x + 3 - x^2 - 1$ Set A
$3(x + 5) + x - 1$ Set A	$3(x + 5) - x + 1$ Set A	$5(x + 3) + x - 1$ Set A	$5(x + 3) - x + 1$ Set A

Answer Cards (Set A)

7th Grade - Readiness Standard 5 – 6.EE.4

Storage Suggestions: Copy the **Problem (Set A)** cards and **Answer (Set A)** cards in two different colors. Store 1 set of each in a sealable bag for each pair of students.

Set A₁

$4x + 6$ Set A	$4x + 4$ Set A		
$2x^2 + 5x + 2$ Set A	$5x + 4$ Set A	$2x^2 + 5x + 4$ Set A	$5x + 2$ Set A
$4x + 14$ Set A	$2x + 16$ Set A	$6x + 14$ Set A	$4x + 16$ Set A

Set A₂

$4x + 6$ Set A	$4x + 4$ Set A		
$2x^2 + 5x + 2$ Set A	$5x + 4$ Set A	$2x^2 + 5x + 4$ Set A	$5x + 2$ Set A
$4x + 14$ Set A	$2x + 16$ Set A	$6x + 14$ Set A	$4x + 16$ Set A

Problem Cards (Set B)

7th Grade - Readiness Standard 5 – 6.EE.4

Storage Suggestions: Copy the **Problem (Set B)** cards and **Answer (Set B)** cards in two different colors.
Store 1 set of each in a sealable bag for each pair of students.

Set B₁	$4x + 6 + x + 2$ Set B	$4x + 6 + x - 2$ Set B	$4x + 6 - x + 2$ Set B	$4x + 6 - x - 2$ Set B
	$x^2 + 6x + 4 + x^2 - 2$ Set B	$x^2 + 6x + 4 - x^2 + 2$ Set B		
	$4(x + 6) + x - 2$ Set B	$4(x + 6) - x + 2$ Set B	$6(x + 4) + x - 2$ Set B	$6(x + 4) - x + 2$ Set B
Set B₂	$4x + 6 + x + 2$ Set B	$4x + 6 + x - 2$ Set B	$4x + 6 - x + 2$ Set B	$4x + 6 - x - 2$ Set B
	$x^2 + 6x + 4 + x^2 - 2$ Set B	$x^2 + 6x + 4 - x^2 + 2$ Set B		
	$4(x + 6) + x - 2$ Set B	$4(x + 6) - x + 2$ Set B	$6(x + 4) + x - 2$ Set B	$6(x + 4) - x + 2$ Set B

Answer Cards (Set B)

Storage Suggestions: Copy the **Problem (Set B)** cards and **Answer (Set B)** cards in two different colors.
Store 1 set of each in a sealable bag for each pair of students.

Set B₁

$5x + 8$ Set B	$5x + 4$ Set B	$3x + 8$ Set B	$3x + 4$ Set B
$2x^2 + 6x + 2$ Set B	$6x + 6$ Set B		
$5x + 22$ Set B	$3x + 26$ Set B	$7x + 22$ Set B	$5x + 26$ Set B

Set B₂

$5x + 8$ Set B	$5x + 4$ Set B	$3x + 8$ Set B	$3x + 4$ Set B
$2x^2 + 6x + 2$ Set B	$6x + 6$ Set B		
$5x + 22$ Set B	$3x + 26$ Set B	$7x + 22$ Set B	$5x + 26$ Set B

Q₁

What is the problem about?

Q₂

What do I need to find?

Q₃

What do I know?

Q₄

What can I try?

Q₅

Does my answer make sense?

Steps for Solving Word Problems

Q₁. What is the problem about?

Q₂. What do I need to find?

Q₃. What do I know?

Q₄. What can I try?

Q₅. Does my answer make sense?