



Tier 3

Intervention Lessons

6.EE.2a

Learning Target: I will translate algebraic expressions between words and symbols

Readiness for 7.EE.4a: Solve equations with more than one step

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Tier 3 Intervention Planning Guide

Learning Target: I will translate algebraic expressions between words and symbols

Readiness for solving equations with more than one step

Recommended Actions	
Beginning (5 min.)	<ul style="list-style-type: none"> ➤ Review the learning target with the whole group ➤ Ask each student to set a goal for the day based on their previous Quick Check Score ➤ Have each student use a highlighter to plot their goal for the day
Middle (15 min.)	<ul style="list-style-type: none"> ➤ Model solving a word problem – “I do” (<i>Sessions 1, 3 and 6 only</i>) ➤ Guided Practice – “We do” <p>Sessions 1 and 2: Translate algebraic expressions between words and symbols using algebra tiles</p> <p>Sessions 3, 4 and 5: Translate algebraic expressions between words and symbols using drawings</p> <p>Sessions 6, 7 and 8: Translate algebraic expressions between words and symbols using structure in the Translation Guide on page 10</p>
End (10 min.)	<ul style="list-style-type: none"> ➤ Bring the students back together. ➤ Ask students to reflect on their progress towards the learning target <ul style="list-style-type: none"> ○ What did I learn today about translating algebraic expressions? ○ How confident do you feel about translating 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 <ul style="list-style-type: none"> ○ If not using Delta Math lessons, record the activity in the table ➤ Collect each student’s Quick Check and Growth Chart
After Session 6	<ul style="list-style-type: none"> ➤ Differentiation Options: <ul style="list-style-type: none"> ○ Allow students who met the learning goal to work independently while others do the guided practice during the next session ○ Exit students who met the learning goal for a third time ➤ Problem solve with a team to plan additional support for students who do not meet the learning goal within 8 sessions



Session 1: Modeling (I Do)

Learning Target: I will translate algebraic expressions between words and symbols

Readiness for solving equations with more than one step

Lisa is planning a birthday party. She would like to give a gift bag to each of her 4 guests and each bag will hold a mystery number of trinkets. Let the variable x represent the mystery number of trinkets in each gift bag. Write an algebraic expression to represent the total number of trinkets needed for all gift bags.

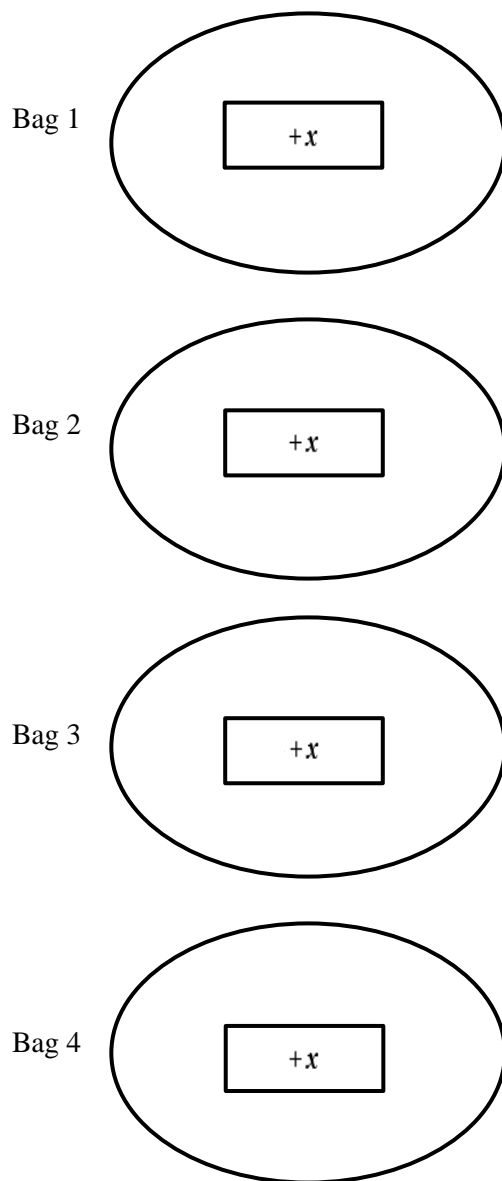


Session 1: Modeling (*I Do – Visual Support*)

Learning Target: I will translate algebraic expressions between words and symbols

Readiness for solving equations with more than one step

Lisa is planning a birthday party. She would like to give a gift bag to each of her 4 guests and each bag will hold a mystery number of trinkets. Let the variable x represent the mystery number of trinkets in each gift bag. Write an algebraic expression to represent the total number of trinkets needed for all gift bags.



$$4 \text{ Groups of } x = 4x$$

Session 1: Modeling (*I Do - Teacher Notes*)

Learning Target: I will translate algebraic expressions between words and symbols

Readiness for solving equations with more than one step

Lisa is planning a birthday party. She would like to give a gift bag to each of her 4 guests and each bag will hold a mystery number of trinkets. Let the variable x represent the mystery number of trinkets in each gift bag. Write an algebraic expression to represent the total number of trinkets needed for all gift bags.

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.

This problem is about Lisa planning a birthday party.

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

I need to find an algebraic expression to represent the total number of trinkets needed for all gift bags.

Third, I need to determine what I know.

I know she needs to build 4 gift bags and each bag will hold a mystery number of trinkets, called x .

I also know that an algebraic expression is a phrase that contains at least a number, a variable and an operation.

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

I am going to use algebra tiles and this reference sheet to help me create an algebraic expression.

I will draw an oval to represent each bag that Lisa needs to fill.

(Draw and label 4 ovals)

Since each bag will contain a mystery number of trinkets, called x ...

I need to place an x -tile in each bag.

(Place an x -tile in each bag.)

I see 4 groups of x ...which I know is a multiplication situation.

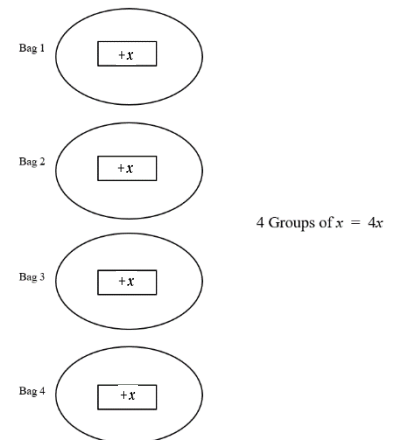
(Write "4 groups of x " on the paper and point to the multiplication row of the translation chart.)

The example in the multiplication row shows that I can write 4 groups of x using symbols as $4x$.

(Point to the phrase "4 groups of x " in the multiplication row of the translation chart.)

Therefore, since the total number of trinkets Lisa needs is 4 groups of x , I can rewrite it using symbols as $4x$.

(Write " $= 4x$ " next to the phrase "4 groups of x "



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

I found that Lisa will need a total of $4x$ trinkets. This makes sense because I modeled the situation using algebra tiles and referred to the translation sheet to see how the situation can be represented using symbols.

Translation Guide

	Words	Phrases	Pictures	Symbols
Addition	<i>Add</i> Plus Sum More Increased Added	Add x and 5 x plus 5 The sum of x and 5 5 more than x x increased by 5 5 added to x		$x + 5$
Subtraction	<i>Subtract</i> Minus Less Decreased Subtracted Difference	Subtract 4 from 6 6 minus 4 4 less than 6 6 decreased by 4 4 subtracted from 6 The difference of 6 and 4		$6 - 4$
Multiplication	<i>Multiply</i> Times Product Twice Doubled	Multiply x and 3 3 times x The product of x and 3 Twice as much of x The value of x is doubled <i>(Not Shown)</i>		$3x$ $2x$
Division	<i>Divide</i> Divided Quotient <i>Per</i>	Divide x by 3 x divided by 3 The quotient of x and 3 <i>Miles per hour</i>	<p>The answer to a division problem may be represented as the size of each equal part.</p>	$x \div 3$ or $\frac{x}{3}$ <i>miles</i> \div <i>hours</i> or $\frac{\text{miles}}{\text{hours}}$
Grouping with ()	<i>Quantity</i>	4 times the quantity of x plus 3 4 times the sum of x and 3 3 times the quantity of x minus 4 3 times the difference of x and 4 <i>(Picture Not Shown)</i>		$4(x + 3)$ $3(x - 4)$
Equality	<i>Equals</i> Equal Equivalent Same Value As	x equals 4 x is equal to 4 x is equivalent to 4 x has the same value as 4	Equation Mat 	$x = 4$



Name _____

Date _____

Learning Target: I will translate algebraic expressions between words and symbols

Session 1: Guided Practice (We Do)

Materials:

- Algebra Tiles (1 set on p. 14: 20 +1s and 16 +x's per student)
- Expression mat (1 per student)
- Translation Guide

We Do Together: (Teacher Actions)

- Label the operations and special groupings. Then, build and write the algebraic expression using symbols.

<p>1.</p> <p>5 less than 9</p> <p>_____</p>	<p>2.</p> <p>The sum of x and 3</p> <p>_____</p>
<p>3.</p> <p>2 times the quantity of 4 plus x</p> <p>_____</p>	<p>4.</p> <p>The difference of 5 and 2</p> <p>_____</p>



Name _____ Date _____

Learning Target: I will translate algebraic expressions between words and symbols

Session 1: Guided Practice (We Do - Continued)

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

- Students take turns leading to say, build and write each algebraic expression using symbols.

<p>5.</p> <p>5 more than x</p> <p>_____</p>	<p>6.</p> <p>The difference of 7 and 3</p> <p>_____</p>
<p>7.</p> <p>3 times the quantity of x plus 2</p> <p>_____</p>	<p>8.</p> <p>The product of x and 4</p> <p>_____</p>
<p>9.</p> <p>2 times the quantity of 1 plus x</p> <p>_____</p>	<p>10.</p> <p>4 less than the quantity of 2 times x</p> <p>_____</p>

Algebra Tiles (2 sets of positive tiles)

Directions: Provide each student one set of positive tiles.

Note: $+x^2$ tiles are included, but will not be used 6.EE.2a and 6.EE.7

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





Modeling & Guided Practice Cards

Use for Problem 1 5 less than 9	Use for Problem 2 The sum of x and 3
Use for Problem 3 2 times the quantity of 4 plus x	Use for Problem 4 The difference of 5 and 2
Use for Problem 5 5 more than x	Use for Problem 6 The difference of 7 and 3
Use for Problem 7 3 times the quantity of x plus 2	Use for Problem 8 The product of x and 4
Use for Problem 9 2 times the quantity of 1 plus x	Use for Problem 10 4 less than the quantity of 2 times x



Session 1: Self-Reflection

Learning Target: I will I will translate algebraic expressions between words and symbols

Briefly discuss student responses

- What did I learn today about translating algebraic expressions?

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



Quick Check - Form A

Name _____ Date _____

Learning Target: I will translate algebraic expressions between words and symbols.

Directions: Write the expression that represents each phrase. (Work time: 4 minutes)

<p>1.</p> <p>The sum of x and 6, times 4</p> <p>_____</p>	<p>2.</p> <p>7 more than the product of 6 and x</p> <p>_____</p>
<p>3.</p> <p>9 less than 4 times x</p> <p>_____</p>	<p>4.</p> <p>The quotient of x and 10, plus 2</p> <p>_____</p>
<p>5.</p> <p>3 times the quantity of x plus 5</p> <p>_____</p>	<p>6.</p> <p>The product of 5 and x, minus 9</p> <p>_____</p>

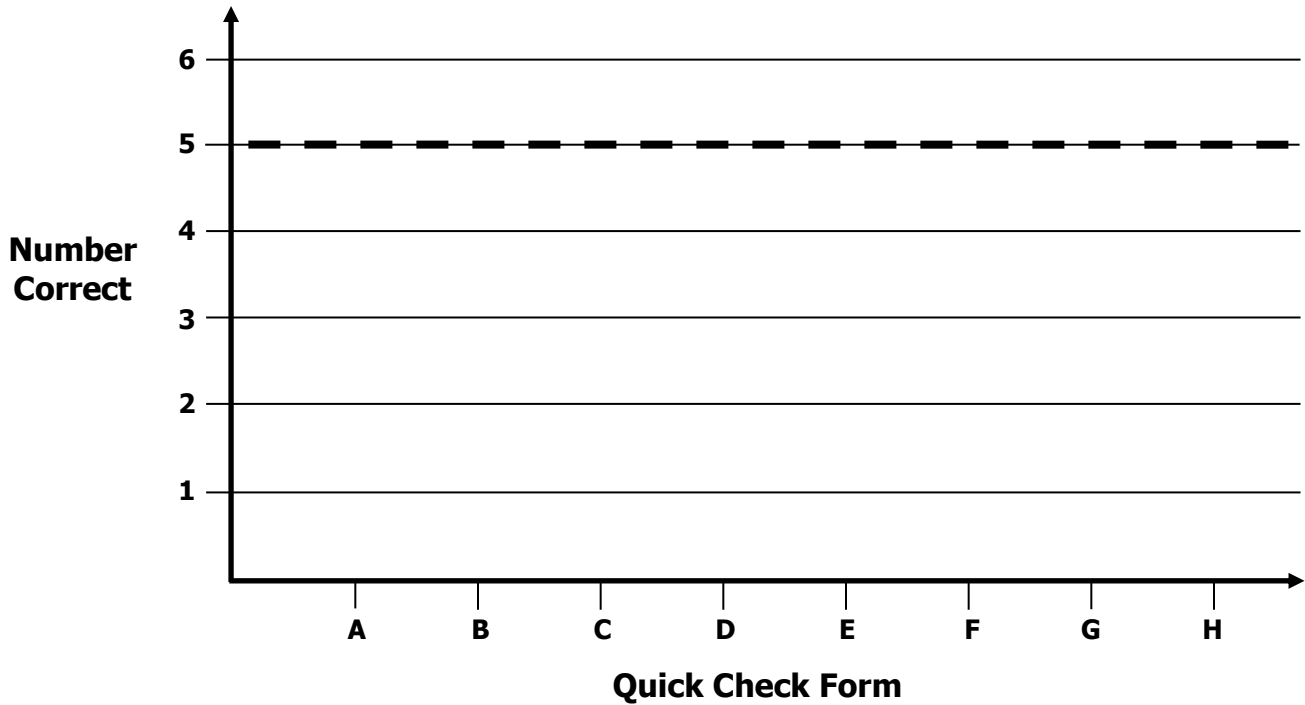


Growth Chart

Name _____ Date _____

Learning Target: I will translate algebraic expressions between words and symbols.

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:		



Name _____

Date _____

Learning Target: I will translate algebraic expressions between words and symbols

Session 2: Guided Practice (We Do)

Materials:

- Algebra Tiles (1 set on p. 14: 20 +1s and 16 + x 's per student)
- Expression mat (1 per student)
- Translation Guide (See Session 1)

We Do Together: (Teacher Actions)

- Label the operations and special groupings. Then, build and write the algebraic expression using symbols.

<p>1.</p> <p>5 more than 3</p> <p>_____</p>	<p>2.</p> <p>The sum of x and 4</p> <p>_____</p>
<p>3.</p> <p>2 times the quantity of 3 plus x</p> <p>_____</p>	<p>4.</p> <p>The difference of 7 and 2</p> <p>_____</p>



Name _____ Date _____

Learning Target: I will translate algebraic expressions between words and symbols

Session 2: Guided Practice (We Do - Continued)

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

- Students take turns leading to say, build and write each algebraic expression using symbols.

<p>5.</p> <p>4 more than x</p> <p>_____</p>	<p>6.</p> <p>The difference of 5 and 3</p> <p>_____</p>
<p>7.</p> <p>3 times the quantity of x plus 1</p> <p>_____</p>	<p>8.</p> <p>The product of x and 4</p> <p>_____</p>
<p>9.</p> <p>2 times the quantity of 3 plus x</p> <p>_____</p>	<p>10.</p> <p>5 less than the quantity of 2 times x</p> <p>_____</p>



Session 2: Self-Reflection

Learning Target: I will I will translate algebraic expressions between words and symbols

Briefly discuss student responses

- What did I learn today about translating algebraic expressions?

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



Quick Check - Form B

Name _____ Date _____

Learning Target: I will translate algebraic expressions between words and symbols.

Directions: Write the expression that represents each phrase. (Work time: 4 minutes)

<p>1.</p> <p>The product of x and 2, plus 4</p> <p>_____</p>	<p>2.</p> <p>The sum of x and 2, increased by 5</p> <p>_____</p>
<p>3.</p> <p>7 less than twice x</p> <p>_____</p>	<p>4.</p> <p>9 increased by the sum of x and 6</p> <p>_____</p>
<p>5.</p> <p>7 times the quantity of 4 minus x</p> <p>_____</p>	<p>6.</p> <p>The quotient of 5 and x, plus 9</p> <p>_____</p>



Session 3: Modeling (*I Do*)

Learning Target: I will translate algebraic expressions between words and symbols

Readiness for solving equations with more than one step

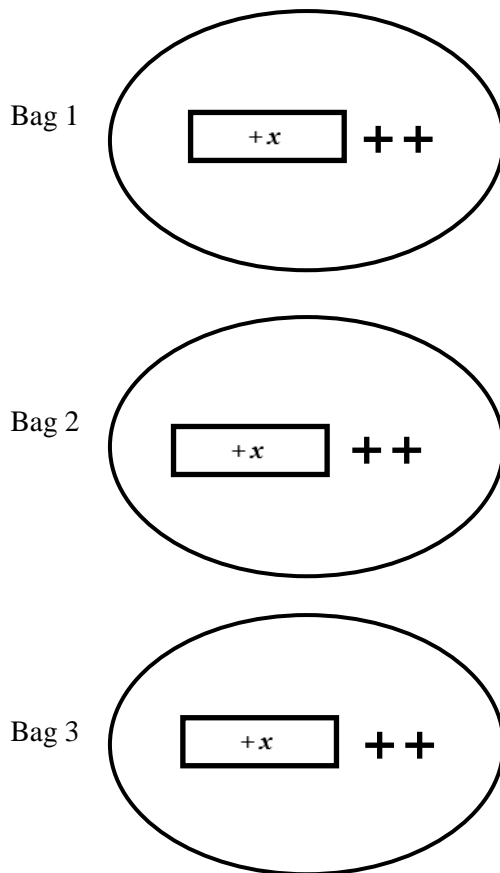
Lisa is planning a birthday party. She would like to give a gift bag to each of her 3 guests and each bag will hold 2 more than a mystery number of trinkets. Let the variable x represent the mystery number of trinkets in each gift bag. Write an algebraic expression to represent the total number of trinkets needed for all gift bags.

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

Learning Target: I will translate algebraic expressions between words and symbols

Readiness for solving equations with more than one step

Lisa is planning a birthday party. She would like to give a gift bag to each of her 3 guests and each bag will hold 2 more than a mystery number of trinkets. Let the variable x represent the mystery number of trinkets in each gift bag. Write an algebraic expression to represent the total number of trinkets needed for all gift bags.



$$3 \text{ Groups of } x + 2 = 3(x + 2)$$

Session 3: Modeling (I Do - Teacher Notes)

Learning Target: I will translate algebraic expressions between words and symbols

Readiness for solving equations with more than one step

Lisa is planning a birthday party. She would like to give a gift bag to each of her 3 guests and each bag will hold 2 more than a mystery number of trinkets. Let the variable x represent the mystery number of trinkets in each gift bag. Write an algebraic expression to represent the total number of trinkets needed for all gift bags.

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.

This problem is about Lisa planning a birthday party.

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

I need to find an algebraic expression to represent the total number of trinkets needed for all gift bags.

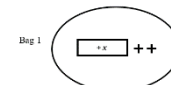
Third, I need to determine what I know.

I know she needs to build 3 gift bags and each bag will hold 2 more than a mystery number of trinkets, called x .

I also know that an algebraic expression is a phrase that contains at least a number, a variable and an operation.

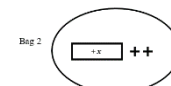
Fourth, I need to figure out what I can try.

I am going to draw algebra tiles and use this reference sheet to help me create an algebraic expression.



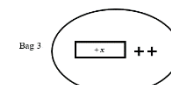
I will draw an oval to represent each bag that Lisa needs to fill.

(Draw and label 3 ovals)



Since each bag will contain 2 more than a mystery number of trinkets, called x ...

I need to represent an x -tile and 2 “+1” tiles in each bag with a drawing.



3 Groups of $x + 2 = 3(x + 2)$

I will use a rectangle labeled with a positive x to represent an x -tile and 2 “plus signs” to represent the 2 “+1” tiles

(Draw the x -tile and 2 “+”s in each bag.)

I see 3 groups of $x + 2$...which I know is a multiplication situation.

(Write “3 groups of $x + 2$ ” on the paper and point to the multiplication row of the translation chart.)

The example in the multiplication row shows that I can write 3 groups of “ x plus 2” using parentheses.

(Point to the phrase “3 groups of $x + 2$ ” in the multiplication row of the translation chart... and write “ $= 3(x + 2)$ ” next to the phrase “3 groups of $x + 2$ ”)

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

I found that Lisa will need a total of 3 times the quantity of $(x + 2)$ trinkets.

(Point to $3(x + 2)$ ” on the Modeling paper.)

This makes sense because I modeled the situation by drawing algebra tiles and referred to the translation sheet to see how the situation can be represented using symbols.



Name _____

Date _____

Learning Target: I will translate algebraic expressions between words and symbols

Session 3: Guided Practice (We Do)

Materials:

- Translation Guide

We Do Together: (Teacher Actions)

- Label the operations and special groupings. Then, draw and write the algebraic expression using symbols.

<p>1. The sum of x and 3, times 2</p> <p>_____</p>	<p>2. 4 more than the product of 5 and x</p> <p>_____</p>
<p>3. The difference of 5 and 2</p> <p>_____</p>	<p>4. The quotient of $2x$ and 3</p> <p>_____</p>



Name _____ Date _____

Learning Target: I will translate algebraic expressions between words and symbols

Session 3: Guided Practice (We Do - Continued)

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

- Students take turns leading to say, draw and write each algebraic expression using symbols.

<p>5. 2 times the quantity of x plus 4</p> <p>_____</p>	<p>6. The difference of x and 3, increased by 2</p> <p>_____</p>
<p>7. The product of 3 and x</p> <p>_____</p>	<p>8. 3 more than twice x</p> <p>_____</p>
<p>9. 2 times the difference of 5 and 3</p> <p>_____</p>	<p>10. The quotient of x and 4</p> <p>_____</p>



Session 3: Self-Reflection

Learning Target: I will I will translate algebraic expressions between words and symbols

Briefly discuss student responses

- What did I learn today about translating algebraic expressions?
- How confident do I feel about translating algebraic expressions on my own? (*Thumbs up, down, or sideways*)



Quick Check - Form C

Name _____ Date _____

Learning Target: I will translate algebraic expressions between words and symbols.

Directions: Write the expression that represents each phrase. (Work time: 4 minutes)

<p>1.</p> <p>The difference of x and 9, times 4</p> <p>_____</p>	<p>2.</p> <p>6 more than the product of 10 and x</p> <p>_____</p>
<p>3.</p> <p>9 less than x times 4</p> <p>_____</p>	<p>4.</p> <p>The sum of x and 2, divided by 4</p> <p>_____</p>
<p>5.</p> <p>6 times the quantity of 2 plus x</p> <p>_____</p>	<p>6.</p> <p>The quotient of 5 and x, minus 9</p> <p>_____</p>



Name _____ Date _____

Learning Target: I will translate algebraic expressions between words and symbols

Session 4: Guided Practice (We Do)

Materials:

- Translation Guide

We Do Together: (Teacher Actions)

- Label the operations and special groupings. Then, draw and write the algebraic expression using symbols.

<p>1.</p> <p>The difference of 7 and 3</p> <p>_____</p>	<p>2.</p> <p>4 more than the quotient of x and 2</p> <p>_____</p>
<p>3.</p> <p>3 more than twice x</p> <p>_____</p>	<p>4.</p> <p>The product of $2x$ and 3</p> <p>_____</p>



Name _____ Date _____

Learning Target: I will translate algebraic expressions between words and symbols

Session 4: Guided Practice (We Do - Continued)

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

- Students take turns leading to say, draw and write each algebraic expression using symbols.

<p>5.</p> <p>2 times the quantity of x plus 4</p> <p>_____</p>	<p>6.</p> <p>The quotient of x and 3, increased by 2</p> <p>_____</p>
<p>7.</p> <p>The sum of 3 and x</p> <p>_____</p>	<p>8.</p> <p>3 more than twice x</p> <p>_____</p>
<p>9.</p> <p>The difference of 5 and 1</p> <p>_____</p>	<p>10.</p> <p>The product of x and 4</p> <p>_____</p>



Session 4: Self-Reflection

Learning Target: I will I will translate algebraic expressions between words and symbols

Briefly discuss student responses

- What did I learn today about translating algebraic expressions?

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



Quick Check - Form D

Name _____ Date _____

Learning Target: I will translate algebraic expressions between words and symbols.

Directions: Write the expression that represents each phrase. (Work time: 4 minutes)

<p>1.</p> <p>The sum of x and 3, divided by 4</p> <p>_____</p>	<p>2.</p> <p>The product of 4 and x, plus 7</p> <p>_____</p>
<p>3.</p> <p>10 less than 8 times x</p> <p>_____</p>	<p>4.</p> <p>The quotient of x and 4, minus 2</p> <p>_____</p>
<p>5.</p> <p>8 times the quantity of 4 plus x</p> <p>_____</p>	<p>6.</p> <p>The difference of 5 and x, times 9</p> <p>_____</p>



Name _____

Date _____

Learning Target: I will translate algebraic expressions between words and symbols

Session 5: Guided Practice (We Do)

Materials:

- Translation Guide

We Do Together: (Teacher Actions)

- Label the operations and special groupings. Then, draw and write the algebraic expression using symbols.

<p>1. The sum of x and 4, times 3</p> <p>_____</p>	<p>2. 2 more than the product of 7 and x</p> <p>_____</p>
<p>3. 5 more than twice x</p> <p>_____</p>	<p>4. The quotient of $4x$ and 2</p> <p>_____</p>



Name _____ Date _____

Learning Target: I will translate algebraic expressions between words and symbols

Session 5: Guided Practice (We Do - Continued)

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

- Students take turns leading to say, draw and write each algebraic expression using symbols.

<p>5. 5 times the quantity of x plus 3</p> <p>_____</p>	<p>6. The sum of x and 4, increased by 1</p> <p>_____</p>
<p>7. The quotient of x and 3</p> <p>_____</p>	<p>8. 8 more than twice x</p> <p>_____</p>
<p>9. The difference of 7 and 2</p> <p>_____</p>	<p>10. The product of x and 4</p> <p>_____</p>



Session 5: Self-Reflection

Learning Target: I will I will translate algebraic expressions between words and symbols

Briefly discuss student responses

- What did I learn today about translating algebraic expressions?

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



Quick Check - Form E

Name _____ Date _____

Learning Target: I will translate algebraic expressions between words and symbols.

Directions: Write the expression that represents each phrase. (Work time: 4 minutes)

<p>1.</p> <p>The sum of x and 6, times 4</p> <p>_____</p>	<p>2.</p> <p>7 more than the product of 6 and x</p> <p>_____</p>
<p>3.</p> <p>9 less than 4 times x</p> <p>_____</p>	<p>4.</p> <p>The quotient of x and 10, plus 2</p> <p>_____</p>
<p>5.</p> <p>3 times the quantity of x plus 5</p> <p>_____</p>	<p>6.</p> <p>The product of 5 and x, minus 9</p> <p>_____</p>



Session 6: Modeling (*I Do*)

Learning Target: I will translate algebraic expressions between words and symbols

Readiness for solving equations with more than one step

On the Delta Math readiness screener, Lisa selected the following answer choice. Is she correct? If not, why do you think she chose her answer?

Which expression represents the phrase?

2 times the quantity of x plus 7

- $7(x + 2)$ $2(x + 7)$ $2x + 7$ $7x + 2$



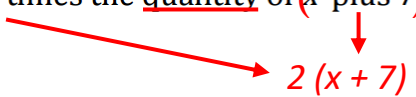
Session 6: Modeling (*I Do – Visual Support*)

Learning Target: I will translate algebraic expressions between words and symbols

Readiness for solving equations with more than one step

On the Delta Math readiness screener, Lisa selected the following answer choice. Is she correct? If not, why do you think she chose her answer?

Which expression represents the phrase?

multiply
2 times the quantity of *add* (x plus 7)

 $2(x + 7)$

- $7(x + 2)$ $2(x + 7)$ $2x + 7$ $7x + 2$



Session 6: Modeling (I Do - Teacher Notes)

Learning Target: I will translate algebraic expressions between words and symbols

Readiness for solving equations with more than one step

On the Delta Math readiness screener, Lisa selected the following answer choice. Is she correct? If not, why do you think she chose her answer?

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.

This problem is about Lisa translating words to symbols on a Delta Math readiness screener.

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

I need to find if Lisa chose the correct answer. And if she was not correct, I need to consider why she made the choice that she did.

Third, I need to determine what I know.

I know that the words were "2 times the quantity of x plus 7" and the answer she chose was " $2x + 7$ ".

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

I am going to use the structure in this reference sheet to help me write the words as symbols.

When I see the word "quantity", the translation guide helps me remember that parentheses are needed.

(Underline the word "quantity", draw parentheses around the x plus 7 in the phrase and an empty parentheses below the problem. Then, point to the bottom row on the Translation Guide.)

I also know that times is a word that usually indicates multiplication and plus usually indicates addition.
(Write "multiply" above "times" and "Add" above "plus" in the phrase.)

The quantities 2 and x plus 7 will be multiplied together...so I need to write a 2 in front of the parentheses.
(Draw an arrow from the "2" in the phrase and write a "2" in front of the parentheses.)

And the quantity x is being added to 7...so I need to write an addition sign between the x and 7.
(Write " $x + 7$ " inside the parentheses.)

I see that this is an answer choice, but not the one that Lisa chose...therefore, she must have been incorrect.

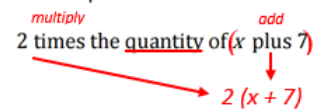
I think Lisa chose her answer because she saw the number 2 and the variable x added to 7.

And I don't think she noticed the word "quantity" to indicate the need for parentheses.

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

I found that Lisa was not correct. It makes sense because I read the problem very carefully looking for all words that mean grouping, operations and quantity...and then referred to the translation guide to make sure that I represented each word accurately.

Which expression represents the phrase?



- $7(x + 2)$
- $2(x + 7)$
- $2x + 7$
- $7x + 2$



Name _____

Date _____

Learning Target: I will translate algebraic expressions between words and symbols

Session 6: Guided Practice (We Do)

Materials:

- Translation Guide

We Do Together: (Teacher Actions)

- Say the algebraic expression, label the operations and special groupings. Then write it using symbols.

<p>1.</p> <p>The sum of x and 5, times 3</p> <p>_____</p>	<p>2.</p> <p>3 more than the product of 8 and x</p> <p>_____</p>
<p>3.</p> <p>7 less than twice x</p> <p>_____</p>	<p>4.</p> <p>The quotient of $4x$ and 9</p> <p>_____</p>



Name _____ Date _____

Learning Target: I will translate algebraic expressions between words and symbols

Session 6: Guided Practice (We Do - Continued)

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

- Students take turns leading to say, label and write each algebraic expression using symbols.

<p>5. 2 times the quantity of x minus 4</p> <p>_____</p>	<p>6. The difference of x and 3, divided by 2</p> <p>_____</p>
<p>7. The quotient of 5 and x</p> <p>_____</p>	<p>8. 7 more than twice x</p> <p>_____</p>
<p>9. 7 times the difference of 10 and x</p> <p>_____</p>	<p>10. The product of x and 4</p> <p>_____</p>



Name _____ Date _____

Learning Target: I will translate algebraic expressions between words and symbols

Session 6: Guided Practice (We Do – Teacher Notes)

Materials:

- Translation Guide

We Do Together: (Teacher Actions)

- Say the algebraic expression, label the operations and special groupings. Then write it using symbols.

<p>1. <i>add</i> <i>multiply</i> The sum of $(x$ and $5)$, times 3</p> <p style="text-align: center;"><u> $3(x + 5)$ </u></p>	<p>2. <i>add</i> <i>multiply</i> 3 more than the product of 8 and x</p> <p style="text-align: center;"><u> $8x + 3$ </u></p>
<p>3. <i>subtract</i> <i>multiply by 2</i> 7 less than twice x</p> <p style="text-align: center;"><u> $2x - 7$ </u></p>	<p>4. <i>divide</i> The quotient of $4x$ and 9</p> <p style="text-align: center;"><u> $\frac{4x}{9}$ </u></p>



Session 6: Self-Reflection

Learning Target: I will I will translate algebraic expressions between words and symbols

Briefly discuss student responses

- What did I learn today about translating algebraic expressions?

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



Quick Check - Form F

Name _____ Date _____

Learning Target: I will translate algebraic expressions between words and symbols.

Directions: Write the expression that represents each phrase. (Work time: 4 minutes)

<p>1.</p> <p>The product of x and 2, plus 4</p> <p>_____</p>	<p>2.</p> <p>The sum of x and 2, increased by 5</p> <p>_____</p>
<p>3.</p> <p>7 less than twice x</p> <p>_____</p>	<p>4.</p> <p>9 increased by the sum of x and 6</p> <p>_____</p>
<p>5.</p> <p>7 times the quantity of 4 minus x</p> <p>_____</p>	<p>6.</p> <p>The quotient of 5 and x, plus 9</p> <p>_____</p>



Name _____

Date _____

Learning Target: I will translate algebraic expressions between words and symbols

Session 7: Guided Practice (We Do)

Materials:

- Translation Guide

We Do Together: (Teacher Actions)

- Say the algebraic expression, label the operations and special groupings. Then write it using symbols.

<p>1. The sum of x and 2, times 6</p> <p>_____</p>	<p>2. 7 more than the product of 3 and x</p> <p>_____</p>
<p>3. 5 less than twice x</p> <p>_____</p>	<p>4. The quotient of $6x$ and 8</p> <p>_____</p>



Name _____ Date _____

Learning Target: I will translate algebraic expressions between words and symbols

Session 7: Guided Practice (We Do - Continued)

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

- Students take turns leading to say, label and write each algebraic expression using symbols.

<p>5. 3 times the quantity of x minus 5</p> <p>_____</p>	<p>6. The difference of x and 2, divided by 9</p> <p>_____</p>
<p>7. The quotient of 7 and x</p> <p>_____</p>	<p>8. 4 more than twice x</p> <p>_____</p>
<p>9. 2 times the difference of 3 and x</p> <p>_____</p>	<p>10. The product of x and 3</p> <p>_____</p>



Session 7: Self-Reflection

Learning Target: I will I will translate algebraic expressions between words and symbols

Briefly discuss student responses

- What did I learn today about translating algebraic expressions?

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



Quick Check - Form G

Name _____ Date _____

Learning Target: I will translate algebraic expressions between words and symbols.

Directions: Write the expression that represents each phrase. (Work time: 4 minutes)

<p>1.</p> <p>The difference of x and 9, times 4</p> <p>_____</p>	<p>2.</p> <p>6 more than the product of 10 and x</p> <p>_____</p>
<p>3.</p> <p>9 less than x times 4</p> <p>_____</p>	<p>4.</p> <p>The sum of x and 2, divided by 4</p> <p>_____</p>
<p>5.</p> <p>6 times the quantity of 2 plus x</p> <p>_____</p>	<p>6.</p> <p>The quotient of 5 and x, minus 9</p> <p>_____</p>



Name _____

Date _____

Learning Target: I will translate algebraic expressions between words and symbols

Session 8: Guided Practice (We Do)

Materials:

- Translation Guide

We Do Together: (Teacher Actions)

- Say the algebraic expression, label the operations and special groupings. Then write it using symbols.

<p>1. The difference of x and 5, times 3</p> <p>_____</p>	<p>2. 3 more than the quotient of 8 and x</p> <p>_____</p>
<p>3. 7 more than twice x</p> <p>_____</p>	<p>4. The product of $4x$ and 9</p> <p>_____</p>



Name _____ Date _____

Learning Target: I will translate algebraic expressions between words and symbols

Session 8: Guided Practice (We Do - Continued)

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

- Students take turns leading to say, label and write each algebraic expression using symbols.

<p>5.</p> <p>2 times the quantity of x plus 4</p> <p>_____</p>	<p>6.</p> <p>The difference of x and 4, divided by 2</p> <p>_____</p>
<p>7.</p> <p>The quotient of 7 and x</p> <p>_____</p>	<p>8.</p> <p>7 less than twice x</p> <p>_____</p>
<p>9.</p> <p>7 times the difference of 3 and x</p> <p>_____</p>	<p>10.</p> <p>The product of x and 5</p> <p>_____</p>



Session 8: Self-Reflection

Learning Target: I will I will translate algebraic expressions between words and symbols

Briefly discuss student responses

- What did I learn today about translating algebraic expressions?

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



Quick Check - Form H

Name _____ Date _____

Learning Target: I will translate algebraic expressions between words and symbols.

Directions: Write the expression that represents each phrase. (Work time: 4 minutes)

<p>1.</p> <p>The sum of x and 3, divided by 4</p> <p>_____</p>	<p>2.</p> <p>The product of 4 and x, plus 7</p> <p>_____</p>
<p>3.</p> <p>10 less than 8 times x</p> <p>_____</p>	<p>4.</p> <p>The quotient of x and 4, minus 2</p> <p>_____</p>
<p>5.</p> <p>8 times the quantity of 4 plus x</p> <p>_____</p>	<p>6.</p> <p>The difference of 5 and x, times 9</p> <p>_____</p>



Independent Practice (You Do)

Learning Target: I will translate algebraic expressions between words and symbols

Readiness for solving equations with more than one step

Title of Game: Play “**Words and Symbols Match-up!**”

Number of Players: 2

Objective: To match all of your “**Words**” cards to the equivalent “**Symbols**” cards.

Materials:

- 1 set of **Words** and **Symbols** cards per group
- 1 recording sheet per player

Set-up:

- Deal all 10 **Words** cards face down in a row.
- Deal 5 **Symbols** cards face up to each player.

Directions:

- **Player 1** goes first
 - Take a card from the row of face down **Words** cards and turn it face up
 - Write the problem on the recording sheet
 - And, find the answer in simplest form
- If **Player 1** has the **Symbols** card, place it face up on top of the **Words** card, take both cards and say:
“The operation(s) in the expression is/are ____.”
- If **Player 1** does not have the answer to the **Words** card, turn the **Words** card back over.
- **Players 1 and 2** alternate turns. The **winner** is the first player to match all 5 of their cards.



Symbols Cards (Set A)

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

Set A ₁	$\frac{x}{2}$ Set A	$2x$ Set A	$x + 2$ Set A	$x - 2$ Set A
	$\frac{x}{3}$ Set A	$3x$ Set A		
	$2(x + 3)$ Set A	$2x + 3$ Set A	$2(x - 3)$ Set A	$2x - 3$ Set A
Set A ₂	$\frac{x}{2}$ Set A	$2x$ Set A	$x + 2$ Set A	$x - 2$ Set A
	$\frac{x}{3}$ Set A	$3x$ Set A		
	$2(x + 3)$ Set A	$2x + 3$ Set A	$2(x - 3)$ Set A	$2x - 3$ Set A



Words Cards (Set A)

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

Set A ₁	The quotient of x and 2 Set A	The product of x and 2 Set A	The sum of x and 2 Set A	The difference of x and 2 Set A
	The quotient of x and 3 Set A	The product of x and 3 Set A		
	2 times the sum of x and 3 Set A	3 more than twice x Set A	2 times the quantity of x minus 3 Set A	3 less than 2 times x Set A
Set A ₂	The quotient of x and 2 Set A	The product of x and 2 Set A	The sum of x and 2 Set A	The difference of x and 2 Set A
	The quotient of x and 3 Set A	The product of x and 3 Set A		
	2 times the sum of x and 3 Set A	3 more than twice x Set A	2 times the quantity of x minus 3 Set A	3 less than 2 times x Set A



Symbols Cards (Set B)

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

Set B ₁	$\frac{4x}{5}$ Set B	$4x$ Set B	$x + 4$ Set B	$x - 4$ Set B
			$x + 5$ Set B	$x - 5$ Set B
	$4(x + 5)$ Set B	$4x + 5$ Set B	$4(x - 5)$ Set B	$4x - 5$ Set B
Set B ₂	$\frac{4x}{5}$ Set B	$4x$ Set B	$x + 4$ Set B	$x - 4$ Set B
			$x + 5$ Set B	$x - 5$ Set B
	$4(x + 5)$ Set B	$4x + 5$ Set B	$4(x - 5)$ Set B	$4x - 5$ Set B



Words Cards (Set B)

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

Set B₁	The quotient of $4x$ and 5 Set B	The product of x and 4 Set B	The sum of x and 4 Set B	The difference of x and 4 Set B
			The sum of x and 5 Set B	The difference of x and 5 Set B
	4 times the sum of x and 5 Set B	5 more than the product of 4 and x Set B	4 times the quantity of x minus 5 Set B	5 less than 4 times x Set B
Set B₂	The quotient of $4x$ and 5 Set B	The product of x and 4 Set B	The sum of x and 4 Set B	The difference of x and 4 Set B
			The sum of x and 5 Set B	The difference of x and 5 Set B
	4 times the sum of x and 5 Set B	5 more than the product of 4 and x Set B	4 times the quantity of x minus 5 Set B	5 less than 4 times x Set B



Questions 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?



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?