Tier 3
Intervention Lessons

7.EE.1c

Learning Target: I will factor linear expressions

Readiness for A.SSE.3a: Factoring quadratic equations

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Tier 3 Intervention Planning Guide

Learning Target: I will factor linear expressions

Readiness for factoring quadratic equations

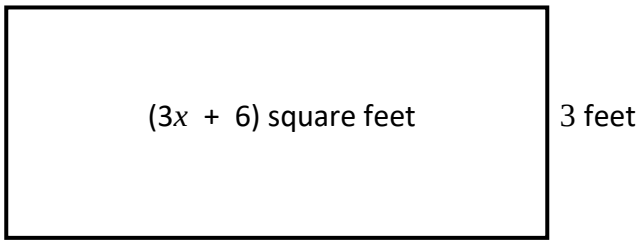
Recommended Actions	
Beginning (5 min.)	➢ Review the learning target with the whole group ➢ Ask each student to set a goal for the day based on their previous Quick Check Score ➢ Have each student use a highlighter to plot their goal for the day
Middle (15 min.)	➢ Model solving a word problem – "I do" *(Sessions 1, 3 and 6 only)* ➢ Guided Practice – "We do" **Sessions 1 and 2:** Factor linear expressions using algebra tiles **Sessions 3, 4 and 5:** Factor linear expressions using drawings **Sessions 6, 7 and 8:** Factor linear expressions using the greatest common factor
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 factoring linear expressions? o How confident do you feel about factoring linear 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 Session 6	➢ Differentiation Options: o Allow students who met the learning goal to work independently while others do the guided practice during the next session o 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 factor linear expressions

Readiness for factoring quadratic equations

Sami needs to install a brick border around a rectangular shaped pathway. The width of the pathway is 3 feet and the area can be represented by the expanded algebraic expression $3x + 6$. Find the algebraic expression that represents the length of the pathway. Then, find the perimeter of the pathway Sami needs to border when the unknown, x, is equal to 4 feet.



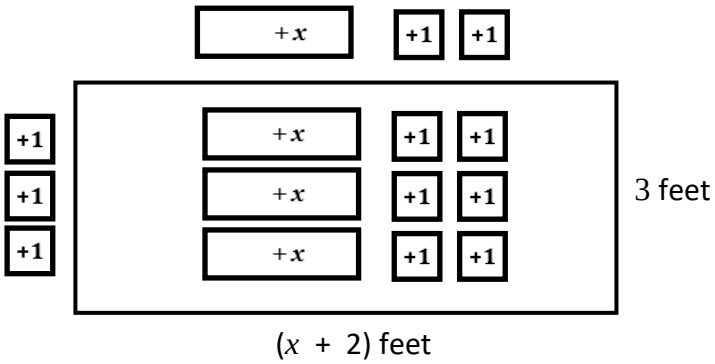
Session 1: Modeling *(I Do – Visual Support)*

Learning Target: I will factor linear expressions

Readiness for factoring quadratic equations

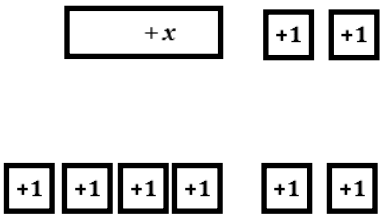
Sami needs to install a brick border around a rectangular shaped pathway. The width of the pathway is 3 feet and the area can be represented by the expanded algebraic expression 3x + 6. Find the algebraic expression that represents the length of the pathway. Then, find the length of the pathway Sami needs to border when the unknown, x, is equal to 4 feet.

Find the Algebraic Length



Algebraic Length = x + 2

Find the Length when x = 4 feet



Length = *6 feet*

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

Learning Target: I will factor linear expressions

Readiness for factoring quadratic equations

Sami needs to install a brick border around a rectangular shaped pathway….

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 a border Sami needs to install around a pathway.

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

I need to find the algebraic expression for the length when the unknown, x, is equal to 4 feet.

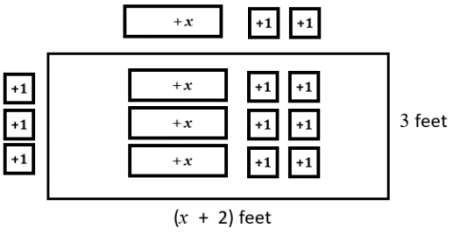
Third, I need to determine what I know.

I know the shape of the garden is a rectangle and its area can be represented using the expanded expression $3x + 6$. (Write "Area = $3x + 6$" below the drawing and point to the area and width in the drawing.**)**

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

I am going to use algebra tiles to help me model this problem.

I will place 3 positive 1-tiles next to the width and I will find 3 x-tiles and 6 positive 1-tiles to place inside the rectangle.
(Place the algebra tiles on the paper.)

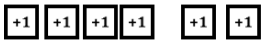


Since the width is 3, I should be able to model the area as 3 equal groups. I just have to figure out how many should be in each group.
(Point to the pile of algebra tiles inside the rectangle.)

Algebraic Length = $x + 2$

The 3 positive x-tiles share equally as 1 in each group.
(Organize the 3 x-tiles so they are aligned with each tile for the width.)

And the 6 positive 1-tiles share equally as 2 in each group.
(Organize the 6 tiles so that 2 are aligned with each tile for the width.)



It looks like the algebraic length is $x + 2$.
(Point to the x and 2 positive 1-tiles in each group, place tiles above the rectangle and write "Algebraic length = x + 2".)

Length = *6 feet*

Now, we want to find the length when x is equal to 4 feet.

I can replace each positive x-tile with 4 positive 1-tiles.
(Replace the x-tile with 4 positive 1-tiles.)

The length is 6 feet.

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

This makes sense because I modeled the width and area using algebra tiles. I divided the area by the width to create equal groups to find the algebraic length. Then, I replaced each x tile with 4 positive 1 tiles to find the length in feet.

Name _____ Date _____

Learning Target: I will factor linear expressions

Session 1: Guided Practice (We Do)

Materials:

- Algebra Tiles (1 set from p. 13 and p. 14: 20 +1-tiles, 20 -1-tiles, 16 +x-tiles and 16 +x-tiles per student)
- Multiplication/Factor Mat (1 per student)

We Do Together: (Teacher Actions)

- Say, build and factor each linear expression to find both products.

Problem type A: When the **coefficient** is a factor of the **constant,** such as **2**x + **8.**

1. $4x + 12$	**2.** $3x + 15$

Problem type B: When the **coefficient** is **not** a factor of the **constant,** such as **8**x + **12.**

3. $6x - 9$	**4.** $-4x + 10$

Name _____ Date _____

Learning Target: I will factor linear expressions

Session 1: Guided Practice (We Do - Continued)

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

- Students take turns leading to factor each linear expression.

5. $3x + 12$	**6.** $4x + 12$
7. $10x + 15$	**8.** $10x - 15$
9. $-3x + 6$	**10.** $-6x - 12$

Name _____ Date _____

Learning Target: I will factor linear expressions

Session 1: Guided Practice (We Do – Teacher Notes)

Materials:

- Algebra Tiles (1 set from p. 13 and p. 14: 20 +1-tiles, 20 -1-tiles, 16 +x-tiles and 16 +x-tiles per student)
- Multiplication/Factor Mat (1 per student)

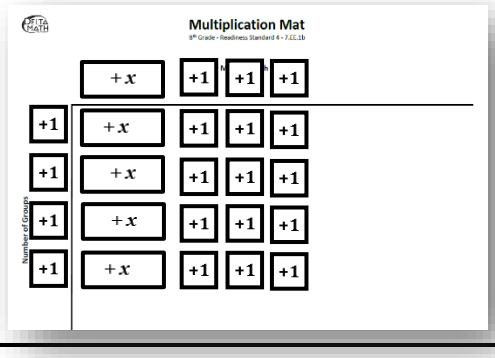
We Do Together: (Teacher Actions)

- Say, build and factor each linear expression to find both products.

Problem type A: When the **coefficient** is a factor of the **constant,** such as **2**x + **8.**

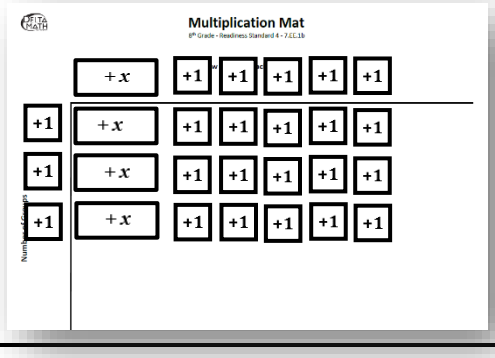
1.

$4x + 12 = 4(x + 3)$



2.

$3x + 15 = 3(x + 5)$

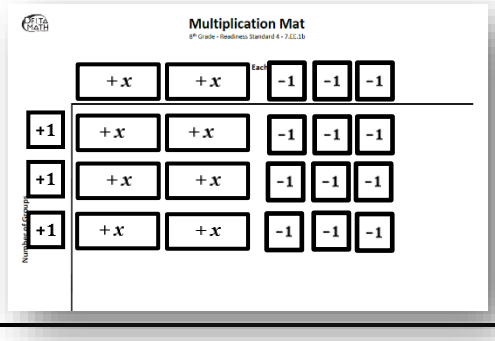


Problem type B: When the **coefficient** is **not** a factor of the **constant,** such as **8**x + **12.**

3.

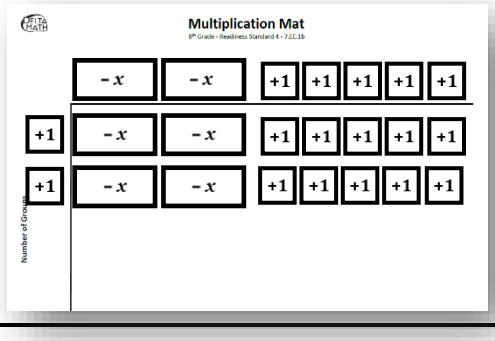
$6x - 9$

$6x + -9 = 3(2x + -3)$



4.

$-4x + 10 = 2(-2x + 5)$



- *Re-write the linear expression using the "add the opposite to subtract" strategy*
- ***The width is the greatest common factor of the coefficient and the constant***
- *Find the length by creating equal groups*

Algebra Tiles (2 sets of positive tiles)

Directions: Provide each student one set of positive and negative tiles.

Note: $+x^2$ tiles and $-x^2$ tiles are included, but will not be used in 7.EE.1c

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

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

Algebra Tiles (2 sets of negative tiles)

Directions: Provide each student one set of positive and negative tiles.

Note: $+x^2$ tiles and $-x^2$ tiles are included, but will not be used in 7.EE.1c

-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

Use for Problem 1 $4x + 12$	Use for Problem 2 $3x + 15$
Use for Problem 3 $6x - 9$	Use for Problem 4 $-4x + 10$
Use for Problem 5 $3x + 12$	Use for Problem 6 $4x + 12$
Use for Problem 7 $10x + 15$	Use for Problem 8 $10x - 15$
Use for Problem 9 $-3x + 6$	Use for Problem 10 $-6x - 12$
Use for Modelling $3x + 6$	

Session 1: Self-Reflection

Learning Target: I will factor linear expressions

Briefly discuss student responses

- What did I learn today about factoring linear expressions?

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

Quick Check - Form A

Name_____ Date_____

Learning Target: I will factor linear expressions.

Directions: Write the equivalent factored expression. (Work time: 5 minutes)

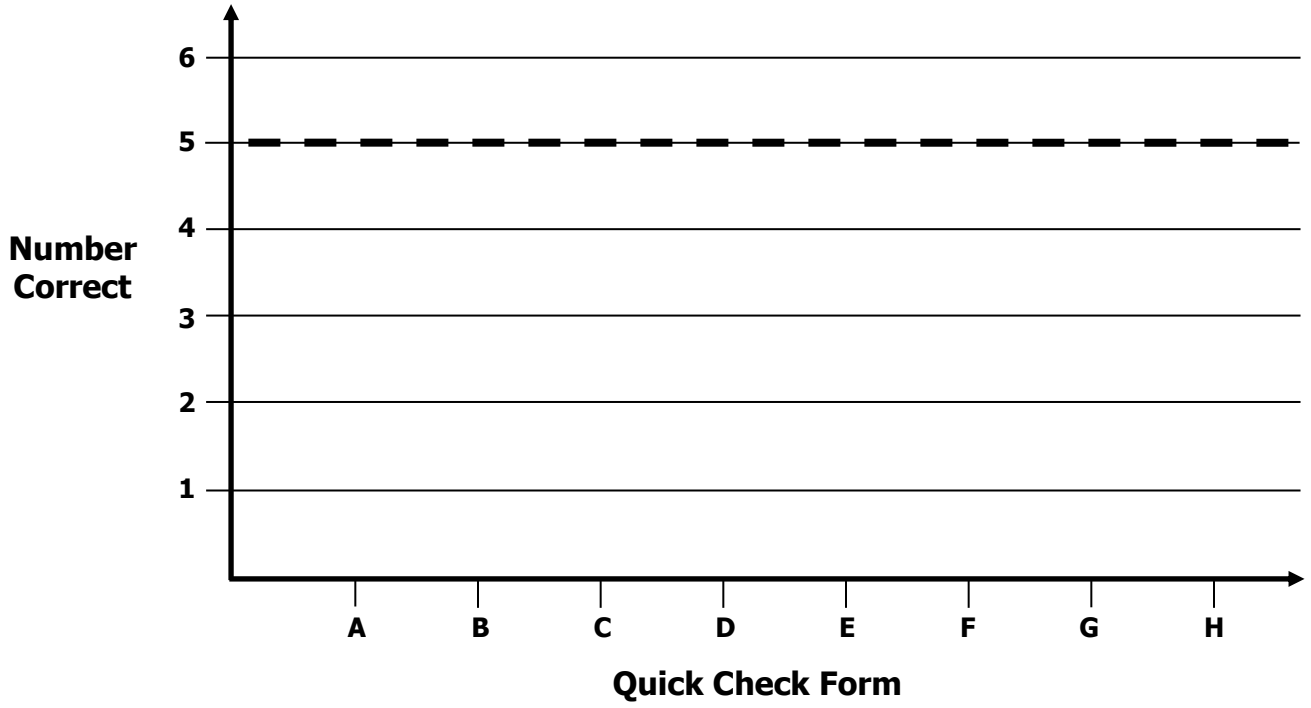
1. $8x + 24$	**2.** $27x - 9$
3. $10x - 45$	**4.** $5x - 20$
5. $24x + 4$	**6.** $9x + 12$

Growth Chart

Name_____ Date_____

Learning Target: I will factor linear expressions.

Goal: 5 out of 6 correct



Intervention	Date	Score
Guided Review		

Name _____ Date _____

Learning Target: I will factor linear expressions

Session 2: Guided Practice (We Do)

Materials:

- Algebra Tiles (1 set from p. 13 and p. 14: 20 +1-tiles, 20 -1-tiles, 16 +x-tiles and 16 +x-tiles per student)
- Multiplication/Factor Mat (1 per student)

We Do Together: (Teacher Actions)

- Say, build and factor each linear expression to find both products.

Problem type A: When the **coefficient** is a factor of the **constant,** such as **2**x + **8.**

1. $4x + 8$	**2.** $3x + 12$

Problem type B: When the **coefficient** is **not** a factor of the **constant,** such as **8**x + **12.**

3. $6x - 15$	**4.** $-4x + 14$

Name _____ Date _____

Learning Target: I will factor linear expressions

Session 2: Guided Practice (We Do - Continued)

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

- Students take turns leading to factor each linear expression.

5. $2x + 12$	**6.** $3x + 15$
7. $8x + 12$	**8.** $8x - 12$
9. $-4x + 8$	**10.** $-5x - 10$

Session 2: Self-Reflection

Learning Target: I will factor linear expressions

Briefly discuss student responses

- What did I learn today about factoring linear expressions?

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

Quick Check - Form B

Name_____ Date_____

Learning Target: I will factor linear expressions.

Directions: Write the equivalent factored expression. (Work time: 5 minutes)

1. $7x + 56$	**2.** $30x + 6$
3. $8x - 20$	**4.** $3x - 12$
5. $36x + 4$	**6.** $12x - 42$

Session 3: Modeling (I Do)

Learning Target: I will factor linear expressions

Readiness for factoring quadratic equations to help understand the functions they define

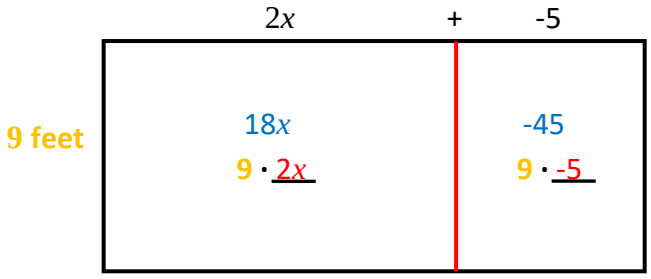
Adam needs to cover a rectangular floor with tiles. The width of the room is 9 feet and algebraic area can be represented by the expanded expression, 18x – 45. Find the algebraic expression that represents the length of the floor. Then, find the length of the floor when the unknown, x, is equal to 10 feet.

Session 3: Modeling (I Do – Visual Support)

Learning Target: I will factor linear expressions

Readiness for factoring quadratic equations

Adam needs to cover a rectangular floor with tiles. The width of the room is 9 feet and algebraic area can be represented by the expanded expression, 18x – 45. Find the algebraic expression that represents the length of the floor. Then, find the length of the floor when the unknown, x, is equal to 10 feet.



Algebraic Area = $18x - 45$

$= 18x + -45$

$= 9(2x + -5)$

Width Length

When x = 10 feet, the length is 15 feet

$2x + -5$

$2(10) + -5$

$20 + -5$

15

- *Re-write the linear expression using the "add the opposite to subtract" strategy*
- ***The width is the greatest common factor of the coefficient and the constant***
- *Find the length by creating equal groups*

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.

Session 3: Modeling *(I Do - Teacher Notes)*

Learning Target: I will factor linear expressions **Readiness** for factoring quadratic equations

Adam needs to cover a rectangular floor with tiles…

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 Adam covering a floor.

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

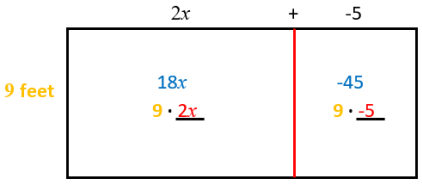
I need to find the algebraic expression that represents the length of the floor and the length of the floor when the unknown, x, is equal to 10 feet. (Point to the width "9" and length to be determined.)

Third, I need to determine what I know.

I know the shape of the floor is a rectangle and its expanded area is represented by the expression 18x – 45. (Write "Algebraic Area = 18x – 45" below the drawing.)

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

I will begin by drawing an area model, similar to when we expanded using algebra tiles.
(Draw a rectangle and label the width "9 feet".)



Next, I will separate the area into 2 partial areas.
(Draw a vertical line inside the rectangle.)

And, rewrite the area using the "add the opposite to subtract" strategy.
(Point to the subtraction sign in the expression for the area.)

Algebraic Area = $18x - 45$
= $18x + -45$
= $9(2x + -5)$
Width Length

When x = 10 feet, the length is 15 feet
$2x + -5$
$2(10) + -5$
$20 + -5$
15

Subtracting 45 is equal to adding negative 45, so I can rewrite the area as 18x + -45.
(Write "18x + -45" below the algebraic area and then "18x" and "-45" inside the rectangle.)

Since I know the width is 9 feet, I can rewrite the area as 9 times the length, which is what I need to find.
(Write "= 9( )" below the algebraic area and also draw two arrows identifying the "width" and "length".)

9 times what is equal to 18 x's and -45 ones?
(Write "9 · ___" below the 18x inside the first area and "9 · ___" below the -45 inside the second area.)

9 times 2 x's is equal to 18 x's and 9 times -5 is equal to negative 45.
(Write "2x" on the first blank and "-5" on the second.)

So, the algebraic length is 2x + -5. (Write "2x + -5" above the rectangle and inside the open parentheses.)

When x is equal to 10 feet… (Write "When x = 10 feet" and "2x + -5")

…we can substitute the x with 10. (Write "2(10) + -5".)

2 groups of 10 is 20 plus negative 5. (Write "20 + -5")

…**and 20 + -5 is equal to 15 positives.** (Write "15" and "the length is 15 feet".)

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

This makes sense because I modeled the area and width in a math drawing. Then, I found the algebraic length using partial areas. And, I found the length when x = 10 feet by substituting the x with 10.

Name _____ Date _____

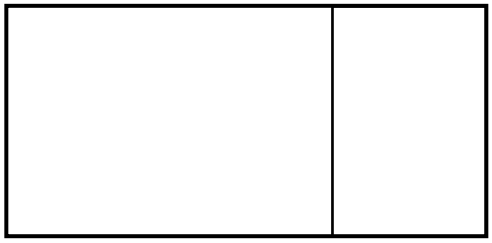
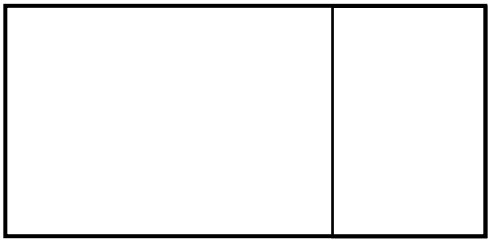
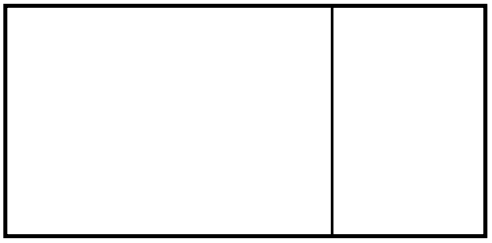
Learning Target: I will factor linear expressions

Session 3: Guided Practice (We Do)

We Do Together: (Teacher Actions)

- Say, draw and factor each linear expression using a math drawing.

Note: *The width is the greatest common factor of the coefficient and the constant.*

1. $4x + 12$ 	**2.** $3x + 15$ 
3. $6x - 15$ 	**4.** $12x - 8$ 

Name _____ Date _____

Learning Target: I will factor linear expressions

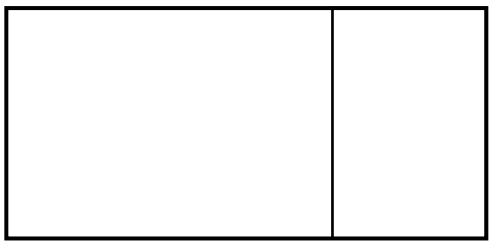
Session 3: Guided Practice (We Do - Continued)

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

- Students take turns leading to factor each linear expression using a math drawing.

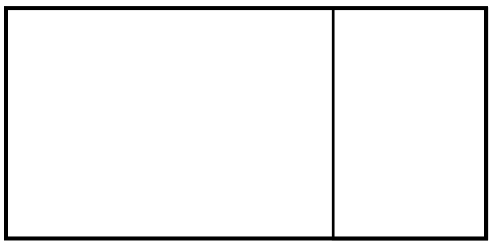
5.

$3x + 12$



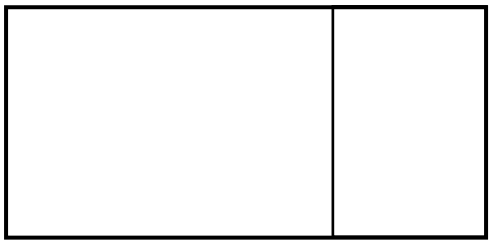
6.

$5x + 20$



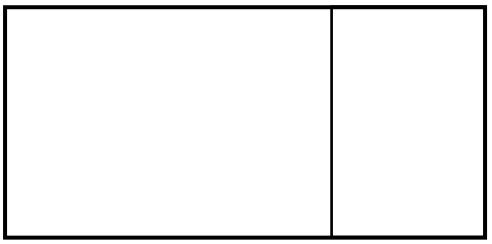
7.

$9x - 15$



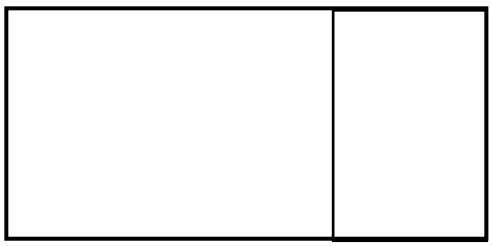
8.

$10x - 6$



9.

$6x + 3$



10.

$4x - 24$

Name _____ Date _____

Learning Target: I will factor linear expressions

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

We Do Together: (Teacher Actions)

- Say, draw and factor each linear expression using a math drawing.

Note: *The width is the greatest common factor of the coefficient and the constant.*

1. $4x + 12 = 4(x + 3)$

4	x	+	3
	$4 \cdot x$ $4x$		$4 \cdot 3$ 12

2. $3x + 15 = 3(x + 5)$

3	x	+	5
	$3 \cdot x$ $3x$		$3 \cdot 5$ 15

3. $6x + -15 = 3(2x + -5)$

$6x - 15$

3	$2x$	+	-5
	$3 \cdot 2x$ $6x$		$3 \cdot -5$ -15

4. $12x + -8 = 4(2x + -3)$

$12x - 8$

4	$3x$	+	-2
	$4 \cdot 3x$ $12x$		$4 \cdot -2$ -8

- *Re-write the linear expression using the "add the opposite to subtract" strategy*
- ***The width is the greatest common factor of the coefficient and the constant***
- *Find the length by creating equal groups*

Session 3: Self-Reflection

Learning Target: I will expand factor expressions

Briefly discuss student responses

- What did I learn today about factoring linear expressions?

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

Quick Check - Form C

Name_____ Date_____

Learning Target: I will factor linear expressions.

Directions: Write the equivalent factored expression. (Work time: 5 minutes)

1. $6x + 42$	**2.** $18x - 3$
3. $21x - 35$	**4.** $4x + 24$
5. $56x + 7$	**6.** $12x - 27$

Name _____ Date _____

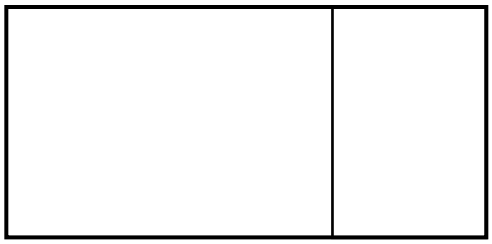
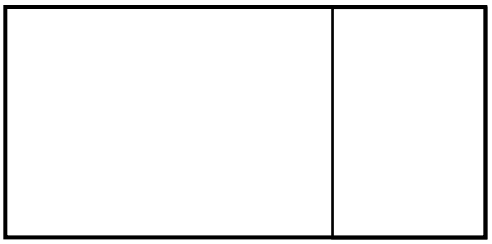
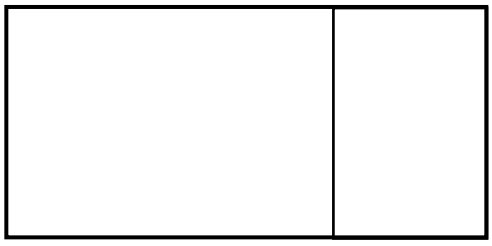
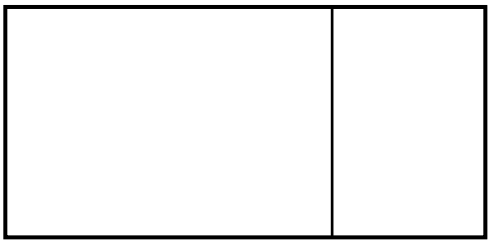
Learning Target: I will factor linear expressions

Session 4: Guided Practice (We Do)

Note: *The width is the greatest common factor of the coefficient and the constant.*

We Do Together: (Teacher Actions)

- Say, draw and factor each linear expression using a math drawing.

1. $4x + 20$ 	**2.** $3x + 21$ 
3. $6x - 27$ 	**4.** $15x - 6$ 

Name _____ Date _____

Learning Target: I will factor linear expressions

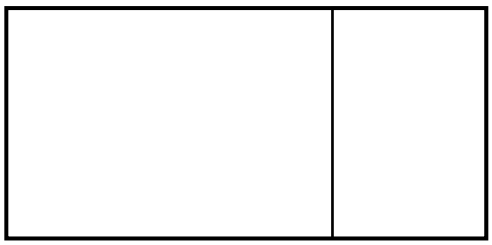
Session 4: Guided Practice (We Do - Continued)

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

- Students take turns leading to factor each linear expression using a math drawing.

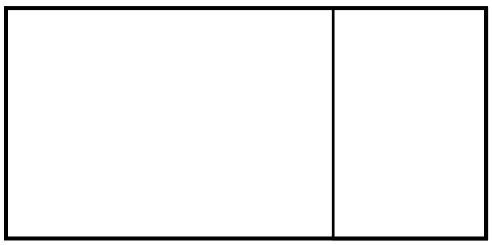
5.

$3x + 15$



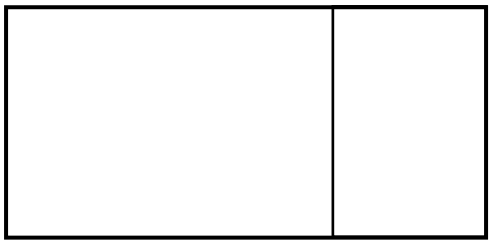
6.

$5x + 30$



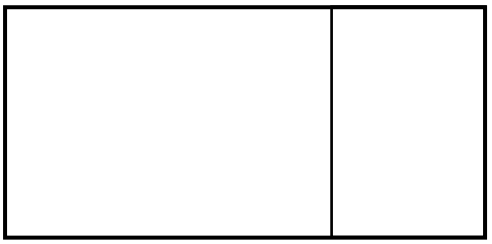
7.

$9x - 21$



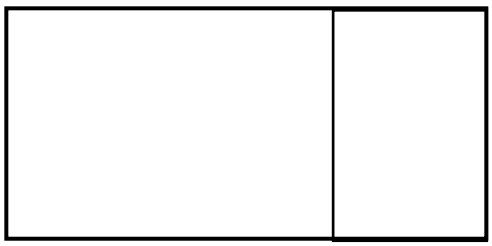
8.

$20x - 6$



9.

$12x + 3$



10.

$4x - 28$

Session 4: Self-Reflection

Learning Target: I will expand factor expressions

Briefly discuss student responses

- What did I learn today about factoring linear expressions?

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

Quick Check - Form D

Name_____ Date_____

Learning Target: I will d factor linear expressions.

Directions: Write the equivalent factored expression. (Work time: 5 minutes)

1. $9x + 36$	**2.** $32x - 8$
3. $12x - 42$	**4.** $7x + 35$
5. $24x - 6$	**6.** $8x + 20$

Name _____ Date _____

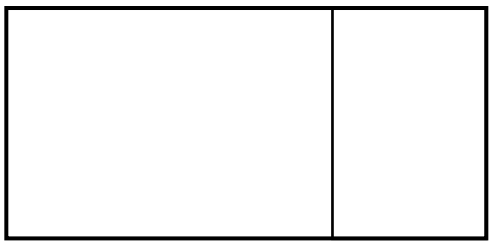
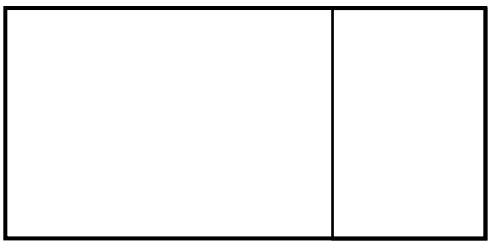
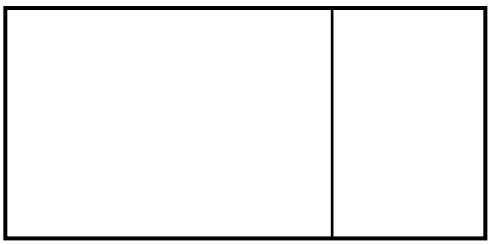
Learning Target: I will factor linear expressions

Session 5: Guided Practice (We Do)

Note: *The width is the greatest common factor of the coefficient and the constant.*

We Do Together: (Teacher Actions)

- Say, draw and factor each linear expression using a math drawing.

1. $3x + 12$ 	**2.** $5x + 15$ 
3. $4x - 18$ 	**4.** $20x - 8$ 

Name _____ Date _____

Learning Target: I will factor linear expressions

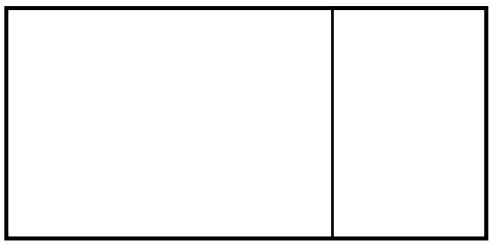
Session 5: Guided Practice (We Do - Continued)

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

- Students take turns leading to factor each linear expression using a math drawing.

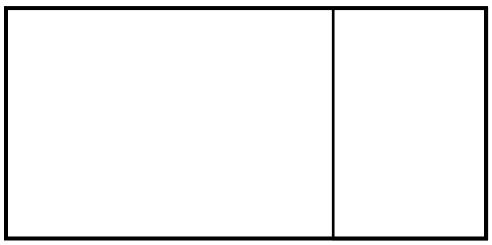
5.

$4x + 12$



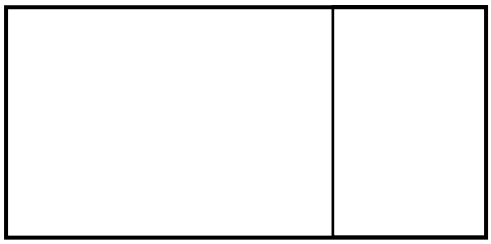
6.

$2x + 20$



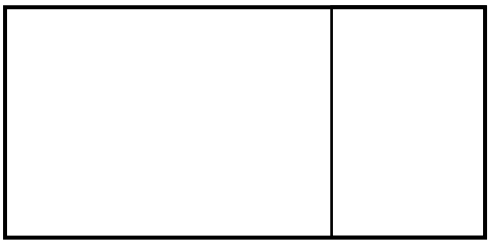
7.

$12x - 15$



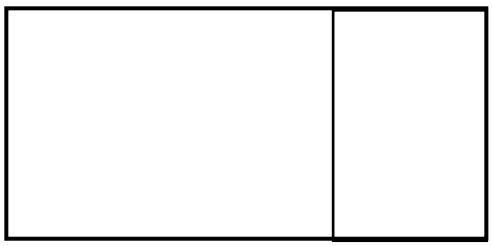
8.

$10x - 8$



9.

$6x + 2$



10.

$8x - 24$

Session 5: Self-Reflection

Learning Target: I will expand factor expressions

Briefly discuss student responses

- What did I learn today about factoring linear expressions?

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

Quick Check - Form E

Name_____ Date_____

Learning Target: I will factor linear expressions.

Directions: Write the equivalent factored expression. (Work time: 5 minutes)

1. $8x + 24$	**2.** $27x - 9$
3. $10x - 45$	**4.** $5x - 20$
6. $24x + 4$	**6.** $9x + 12$

Session 6: Modeling (I Do)

Learning Target: I will factor linear expressions

Readiness for factoring quadratic equations

On the Delta Math readiness screener, Joe selected the following answer choice. Is he correct? If not, why do you think he chose his answer?

Find the equivalent factored expression:

$$20x - 5$$

○ $-5(4x + 1)$ ● $5(4x - 1)$ ○ $15x$ ○ $5(15x - 1)$

Session 6: Modeling (I Do)

Learning Target: I will factor linear expressions

Readiness for factoring quadratic equations

On the Delta Math readiness screener, Joe selected the following answer choice. Is he correct? If not, why do you think he chose his answer?

Find the equivalent factored expression:

$20x - 5 = 20x + -5 = 5(4x + -1)$

Twenty x's and five -1's

$1 \cdot 20 \cdot x$ $\quad$ $-1 \cdot 5$

$2 \cdot 10 \cdot x$ $\quad$ $1 \cdot -5$

$4 \cdot 5 \cdot x$

○ $-5(4x + 1)$ ● $5(4x - 1)$ ○ $15x$ ○ $5(15x - 1)$

- *Re-write the linear expression using the "add the opposite to subtract" strategy*
- ***The width is the greatest common factor of the coefficient and the constant***
- *Find the length by creating equal groups*

Session 6: Modeling *(I Do - Teacher Notes)*

Learning Target: I will factor linear expressions

Readiness for factoring quadratic equations

On the Delta Math readiness screener, Joe selected the following answer choice. Is he correct? If not, why do you think he chose his answer?

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

This problem is about Joe answering a problem on a Delta Math readiness screener.

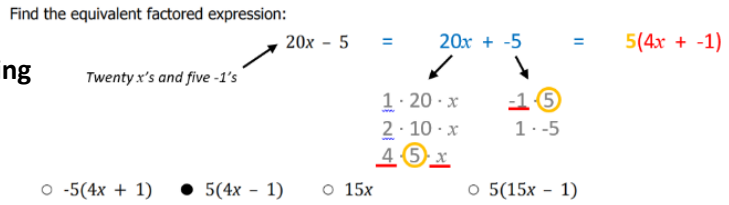
Second, I need to determine what I need to find.

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

Third, I need to determine what I know.

I know that Joe chose "5(4x – 1)" as the factored answer. I also know that there are twenty x's and 5 -1's.
(Draw an arrow and write "Twenty x's and five -1's".)

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



I am going to try writing an equivalent expression using factor pairs of the coefficient and constant.

Factors of 20x are 1 · 20 · x, 2 · 10 · x, and 4 · 5 · x.
(Write each set of factors below the "20x".)

And factors of -5 are -1 · 5 and 1 · -5.
(Write each set of factors below the "-5".)

It looks like 5 is the greatest factor that is common to both terms.
(Circle the "5" in each group of factors.)

20x + -5 can be written as 5 times another factor.
(Write "= 5( )".)

The first term in the parentheses is 4x.
(Underline the "4" and "x" next to the "5" in the first list of factors and write "4x" in the parenthesis.)

The second term in the parentheses is -1.
(Underline the "-1" next to the "5" in the second list of factors and write "+ -1" in the parenthesis.)

This is the answer choice that Joe chose…therefore, he must have been correct.

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

It makes sense because I found possible factors for the coeficient and constant to find the greatest common factor. And used them to find two products that were the same as Joes answer choice.

Name _____ Date _____

Learning Target: I will factor linear expressions

Session 6: Guided Practice (We Do)

We Do Together: (Teacher Actions)

- Factor each linear expression.

1. $15x + 5$	**2.** $14x - 7$
3. $8x - 12$	**4.** $15x - 9$

Name _____ Date _____

Learning Target: I will factor linear expressions

Session 6: Guided Practice (We Do - Continued)

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

- Students take turns leading to factor each linear expression.

5. $15x + 12$	**6.** $8x - 12$
7. $20x - 8$	**8.** $18x + 6$
9. $28x - 12$	**10.** $16x - 24$

Name _____ Date _____

Learning Target: I will factor linear expressions

Session 6: Guided Practice (We Do)

We Do Together: (Teacher Actions)

- Factor each linear expression.

1.

$1 \cdot 15 \cdot x$	$1 \cdot 5$
$3 \cdot 5 \cdot x$	

$15x + 5 = 5 \cdot 3x + 5 \cdot 1$

$= 5(3x + 1)$

2.

$1 \cdot 14 \cdot x$	$1 \cdot -7$
$2 \cdot 7 \cdot x$	$-1 \cdot 7$

$14x - 7 = 14x + -7$

$= 7 \cdot 2x + 7 \cdot -1$

$= 7(2x + -1)$

3.

$1 \cdot 8 \cdot x$	$1 \cdot -12$
$2 \cdot 4 \cdot x$	$-1 \cdot 12$
	$2 \cdot -6$
	$-2 \cdot 6$
	$3 \cdot -4$
	$-3 \cdot 4$

$8x - 12 = 8x + -12$

$= 4 \cdot 2x + 4 \cdot -3$

$= 4(2x + -3)$

4.

$1 \cdot 15 \cdot x$	$1 \cdot -9$
$3 \cdot 5 \cdot x$	$-1 \cdot 9$
	$3 \cdot -3$

$15x - 9 = 15x + -9$

$= 3 \cdot 5x + 3 \cdot -3$

$= 3(5x + -3)$

- *Re-write the linear expression using the "add the opposite to subtract" strategy*
- ***The width is the greatest common factor of the coefficient and the constant***
- *Find the length by creating equal groups*

Session 6: Self-Reflection

Learning Target: I will factor linear expressions

Briefly discuss student responses

- What did I learn today about factoring linear expressions?

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

Quick Check - Form F

Name_____ Date_____

Learning Target: I will factor linear expressions.

Directions: Write the equivalent factored expression. (Work time: 5 minutes)

1. $7x + 56$	**2.** $30x + 6$
3. $8x - 20$	**4.** $3x - 12$
6. $36x + 4$	**6.** $12x - 42$

Name _____ Date _____

Learning Target: I will factor linear expressions

Session 7: Guided Practice (We Do)

We Do Together: (Teacher Actions)

- Factor each linear expression.

1. $20x + 5$	**2.** $21x - 7$
3. $8x - 20$	**4.** $21x - 6$

Name _____ Date _____

Learning Target: I will factor linear expressions

Session 7: Guided Practice (We Do - Continued)

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

- Students take turns leading to factor each linear expression.

5. $18x + 12$	**6.** $6x - 15$
7. $28x - 8$	**8.** $24x + 6$
9. $30x - 12$	**10.** $12x - 18$

Session 7: Self-Reflection

Learning Target: I will factor linear expressions

Briefly discuss student responses

- What did I learn today about factoring linear expressions?

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

Quick Check - Form G

Name_____ Date_____

Learning Target: I will factor linear expressions.

Directions: Write the equivalent factored expression. (Work time: 5 minutes)

1. $6x + 42$	**2.** $18x - 3$
3. $21x - 35$	**4.** $4x + 24$
6. $56x + 7$	**6.** $12x - 27$

Name _____ Date _____

Learning Target: I will factor linear expressions

Session 8: Guided Practice (We Do)

We Do Together: (Teacher Actions)

- Factor each linear expression.

1. $35x + 5$	**2.** $21x - 7$
3. $8x - 20$	**4.** $24x - 9$

Name _____ Date _____

Learning Target: I will factor linear expressions

Session 8: Guided Practice (We Do - Continued)

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

- Students take turns leading to factor each linear expression.

5. $18x + 12$	**6.** $8x - 20$
7. $28x - 8$	**8.** $30x + 6$
9. $16x - 12$	**10.** $32x - 24$

Session 8: Self-Reflection

Learning Target: I will factor linear expressions

Briefly discuss student responses

- What did I learn today about factoring linear expressions?

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

Quick Check - Form H

Name_____ Date_____

Learning Target: I will d factor linear expressions.

Directions: Write the equivalent factored expression. (Work time: 5 minutes)

1. $9x + 36$	**2.** $32x - 8$
3. $12x - 42$	**4.** $7x + 35$
6. $24x - 6$	**6.** $8x + 20$

Independent Practice (You Do)

Learning Target: I will factor linear expressions

Readiness for factoring quadratic equations

Title of Game: Play "**Factor Linear Expressions Match-up**!"

Number of Players: 2

Objective: To match all of your **"Problem"** cards to the equivalent **"Answer"** linear expression 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
  - Take a card from the row of face down **Problem** 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 **Answer** card, place it face up on top of the **Problem** card, take both cards and say:

  "The value being distributed is ___."

- If **Player 1** does not have the equivalent **Answer** 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)

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 A_1	$2x + 8$ Set A	$12x + 3$ Set A	$8x + 12$ Set A	$20x + 35$ Set A
	$8x - 2$ Set A	$3x - 12$ Set A	$12x - 8$ Set A	$35x - 20$ Set A
	$36x + 28$ Set A	$28x - 36$ Set A		
Set A_2	$2x + 8$ Set A	$12x + 3$ Set A	$8x + 12$ Set A	$20x + 35$ Set A
	$8x - 2$ Set A	$3x - 12$ Set A	$12x - 8$ Set A	$35x - 20$ Set A
	$36x + 28$ Set A	$28x - 36$ Set A		

Answer Cards (Set A)

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 A_1	$2(x + 4)$ Set A	$3(4x + 1)$ Set A	$4(2x + 3)$ Set A	$5(4x + 7)$ Set A
	$2(4x - 1)$ Set A	$3(x - 4)$ Set A	$4(3x - 2)$ Set A	$5(7x - 4)$ Set A
	$4(9x + 7)$ Set A	$4(7x - 9)$ Set A		
Set A_2	$2(x + 4)$ Set A	$3(4x + 1)$ Set A	$4(2x + 3)$ Set A	$5(4x + 7)$ Set A
	$2(4x - 1)$ Set A	$3(x - 4)$ Set A	$4(3x - 2)$ Set A	$5(7x - 4)$ Set A
	$4(9x + 7)$ Set A	$4(7x - 9)$ Set A	Set A	Set A

Problem 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 B_1	$6x + 24$ Set B	$28x + 7$ Set B	$16x + 24$ Set B	$36x + 63$ Set B
	$24x - 6$ Set B	$7x - 28$ Set B	$24x - 16$ Set B	$63x - 36$ Set B
	$15x + 10$ Set B	$10x - 15$ Set B		
Set B_2	$6x + 24$ Set B	$28x + 7$ Set B	$16x + 24$ Set B	$36x + 63$ Set B
	$24x - 6$ Set B	$7x - 28$ Set B	$24x - 16$ Set B	$63x - 36$ Set B
	$15x + 10$ Set B	$10x - 15$ 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 B_1	$6(x + 4)$ Set B	$7(4x + 1)$ Set B	$8(2x + 3)$ Set B	$9(4x + 7)$ Set B
	$6(4x - 1)$ Set B	$7(x - 4)$ Set B	$8(3x - 2)$ Set B	$9(7x - 4)$ Set B
	$5(3x + 2)$ Set B	$5(2x - 3)$ Set B		
Set B_2	$6(x + 4)$ Set B	$7(4x + 1)$ Set B	$8(2x + 3)$ Set B	$9(4x + 7)$ Set B
	$6(4x - 1)$ Set B	$7(x - 4)$ Set B	$8(3x - 2)$ Set B	$9(7x - 4)$ Set B
	$5(3x + 2)$ Set B	$5(2x - 3)$ Set B		

Questions for Solving Word Problems

Q_1 ***What is the problem about?***
Q_2 ***What do I need to find?***
Q_3 ***What do I know?***
Q_4 ***What can I try?***
Q_5 ***Does my answer make sense?***

Steps for Solving Word Problems

Q_1. *What is the problem about?*
Q_2. *What do I need to find?*
Q_3. *What do I know?*
Q_4. *What can I try?*
Q_5. *Does my answer make sense?*