

Virtual Learning

9-12th Essential Math Unit 10

Lesson 4: Products, Sums, and Signs

April 20, 2020



Essentials Math 4 Lesson 4: April 20, 2020

Learning Target:

I can use an area model to factor trinomials (a=1).



You will explore the use of area models to factor algebraic expressions.

Directions:

- 1. Click through the slides.
- 2. Watch all videos on slides.
- 3. Do what each slide asks on a separate sheet of paper.



Bell Work April 20, 2020

List all the possible factors of 24. Include all different sign combinations.

Example: -2, 12



Bell Work Answer Key April 20, 2020

$$-1 \times -24$$

$$-2 \times -12$$

$$-3 \times -8$$

$$-4 \times -6$$



Thinking out Loud

Jay and Lena are factoring this expression: $x^2 + 5x - 6$.

Jay: We need two numbers with a product of 6 and a sum of 5. So it's 3 and 2, right?

Lena: We need a product of negative 6, Jay. One of the factors has to have subtraction in it.

Jay: But they still have to add up to positive five. So, something is positive...

Lena: That's true. Hmm. They have a product of -6 and a sum of 5. Oh! I know!

(Complete the dialog in your own words.)



Answer Key:

Once you have completed the problem, check your answer here.

Thinking out Loud

Jay:

We need two numbers with a product of 6 and a sum of 5. So it's 3 and 2, right?

Jay and Lena are factoring this expression: $x^2 + 5x - 6$.

Lena: We need a product of *negative* 6, Jay. One of the factors has to have subtraction in it.

Jay: But they still have to add up to positive five. So, something is positive...

Lena: That's true. Hmm. They have a product of -6 and a sum of 5. Oh! I know!

The two numbers are -1 and 6. So the factors are (x-1) and (x+6).

(Complete the dialog in your own words.)



Practice Problems: Unit 10 Lesson 4 page 18, 1-4

IMPORTANT STUFF

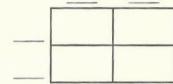
Problems 1 through 4 show multiplication equations like this: $(x \Box 5) (x \Box 4) =$ _____. Write only + or - in the boxes (\Box) to make all four problems different. Then use the models to multiply and complete the equations. The first is started for you.

(1)
$$(x \pm 5) (x - 4) =$$

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$$(x \square 5) (x \square 4) =$$

$$(x \Box 5) (x \Box 4) =$$





Answer Key:

Once you have completed the problems, check your answers for page 18 here.

Problems 1 through 4 show multiplication equations like this: $(x \square 5)(x \square 4) = \underline{\hspace{1cm}}$. Write only + or - in the boxes (\square) to make all four problems different. Then use the models to multiply and complete the equations. The first is started for you.

①
$$(x \oplus 5)(x \oplus 4) = \underbrace{X^2 + X - 20}_{X \oplus 5}$$

 $\underbrace{X}_{-4} \underbrace{5X}_{-4X}$

3
$$(x \Box 5) (x \Box 4) = \underline{X^2 - X - 20}$$

 $\underline{X} \quad \underline{-5}$
 $\underline{X} \quad 4$
 $\underline{X} \quad -5$

②
$$(x \boxplus 5)(x \boxplus 4) = \underbrace{X^2 + 9X + 20}$$

$$\underbrace{X} = \underbrace{5} \qquad \text{(The order of responses to problems 2, 3, and 4 will vary.)}$$



Practice Problems: Unit 10 Lesson 4 (page 18)

Now, work backward. Find the missing operations in the factors, and complete the models.

(5)
$$x^2 - 5x - 14 = (x \square 2)(x \square 7)$$

6
$$x^2 - 9x + 14 = (x \square 2)(x \square 7)$$

(5)
$$x^2 - 5x - 14 = (x \square 2)(x \square 7)$$
 (6) $x^2 - 9x + 14 = (x \square 2)(x \square 7)$ (7) $x^2 - 5x + 6 = (x \square 2)(x \square 3)$

X	
X ²	
	-14
	<u>X</u> X ²

X	
X2	
	14
	<u>X</u>

г		
X	X ²	
		6



Answer Key:

Once you have completed the problems, check your answers for page 18 here.

Now, work backward. Find the missing operations in the factors, and complete the models.

(5)
$$x^2 - 5x - 14 = (x \oplus 2) (x \ominus 7)$$

6
$$x^2 - 9x + 14 = (x \square 2) (x \square 7)$$

$$(7)$$
 $x^2 - 5x + 6 = (x \square 2) (x \square 3)$

$$\begin{array}{c|cccc} & x & -7 \\ \hline x & x^2 & -7x \\ \hline 2 & 2x & -14 \\ \hline \end{array}$$

$$\begin{array}{c|cccc} x & -7 \\ x & x^2 & -7x \\ \hline -2 & -2x & 14 \\ \hline \end{array}$$

$$\begin{array}{c|cccc} x & -3 \\ x & x^2 & -3x \\ \hline -2 & -2x & 6 \\ \end{array}$$



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