



Math Virtual Learning

HS/Essential Math II

May 13, 2020



High School/Essential Math 2
Lesson: May 13, 2020
(U4L5 Part II)

Objective/Learning Target:

Use area model thinking to apply the distributive property to multiplication problems & Translate between symbolic expressions & area models.

Bellwork

Who Am I?

- I am odd.
- My tens digit is a perfect square.
- $h < t < u$
- My hundreds digit is one less than my tens digit.
- $h + t = u$

<i>h</i>	<i>t</i>	<i>u</i>
<input type="text"/>	<input type="text"/>	<input type="text"/>

23

MysteryGrid **1, 2, 3, 4**

8,•			5,+
8,•	9,•		
	8,+		1
		2,-	

Bellwork Key

22

Who Am I?

- I am odd.
- My tens digit is a perfect square.
- $h < t < u$
- My hundreds digit is one less than my tens digit.
- $h + t = u$

<i>h</i>	<i>t</i>	<i>u</i>
3	4	7

23

MysteryGrid 1, 2, 3, 4

8, • 1	2	4	5, + 3
8, • 4	9, • 3	1	2
2	8, + 4	3	1 1
3	1	2, - 2	4

Lesson - Important Stuff

What multiplications are shown here, and what are the answers?

⑧

$$2x \begin{cases} x \\ x \end{cases} \begin{array}{|c|c|c|c|c|} \hline xy & xy & xy & xy & xy \\ \hline xy & xy & xy & xy & xy \\ \hline \end{array}$$

$\overbrace{\quad\quad\quad\quad\quad}^{5y}$
 $y \quad y \quad y \quad y \quad y$

$$2x \cdot \underline{\quad\quad\quad} = \underline{\quad\quad\quad}$$

⑨

$$3j \begin{array}{|c|c|c|c|c|c|} \hline & & & & & -2j \\ \hline & & & & & -2j \\ \hline & & & & & -2j \\ \hline \end{array}$$

$\overbrace{\quad\quad\quad\quad\quad\quad}^{4k}$
 -2
 These 12 are all jk

$$3j(\underline{\quad\quad\quad}) = \underline{\quad\quad\quad} - 6j$$

⑩

$$x \begin{array}{|c|} \hline 5xy \\ \hline \end{array}$$

$$4 \begin{array}{|c|} \hline 20y \\ \hline \end{array}$$

$$5y(\underline{\quad\quad\quad}) = \underline{\quad\quad\quad}$$

Lesson - Combine Like Terms

What multiplications are shown here, and what are the answers?

⑧

$$2x \cdot \underline{5y} = \underline{10xy}$$

⑨

$$3j(\underline{4k - 2}) = \underline{12jk} - 6j$$

⑩

$$5y(\underline{x + 4}) = \underline{5xy + 20y}$$

Like Terms have the same variable to the same power.

xy (y multiplied x times) is difference from y (whatever it could maybe 0.1, 1, 100)

Answers

Important Stuff

Area models work the same way for any multiplication problem with 2 factors. The 2 factors go on the outside as the 2 sidelengths of the rectangle. Then, multiply the factors to find the measure of each piece of the area. Finally, add the pieces to find the total area inside the model (the product).

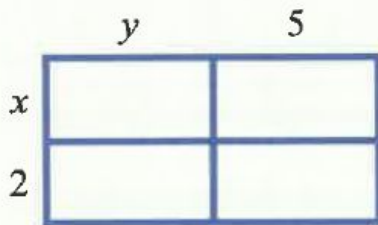
- 11 What are the factors in this model?

()()

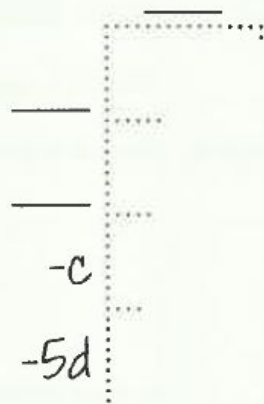
- 12 Fill in the area of each of the smaller rectangles.

- 13 What is the product (the area of the model)?

$(x + 2)(y + 5) = \underline{xy} + \underline{\hspace{2cm}}$



- 14 Complete this model to find $3(a + 2b - c - 5d)$



- 15 So, what is $3(a + 2b - c - 5d)$?

3a +

Area models work the same way for any multiplication problem with 2 factors. The 2 factors go on the outside as the 2 sidelengths of the rectangle. Then, multiply the factors to find the measure of each piece of the area. Finally, add the pieces to find the total area inside the model (the product).

- ⑪ What are the factors in this model?

$$(\underline{x + 2})(\underline{y + 5})$$

	y	5
x	xy	$5x$
2	$2y$	10

- ⑫ Fill in the area of each of the smaller rectangles.

- ⑬ What is the product (the area of the model)?

$$(x + 2)(y + 5) = \underline{xy + 5x + 2y + 10}$$

- ⑭ Complete this model to find $3(a + 2b - c - 5d)$

	3
a	$3a$
$2b$	$6b$
$-c$	$-3c$
$-5d$	$-15d$

- ⑮ So, what is $3(a + 2b - c - 5d)$?

$$\underline{3a + 6b - 3c - 15d}$$

Stuff to Make You Think

32 This multiplication has three factors: $3(x + 5)(y - 2)$.

a Pick two of the factors, and use an area model to multiply them first.

b Multiply the product from part a by the remaining factor in the original problem to get the final answer.

Area models work well for multiplying 2 factors. If there are more than 2 factors, use more models: one model for each multiplication.

ANSWER Stuff to Make You Think

32) This multiplication has three factors: $3(x + 5)(y - 2)$.

a) Pick two of the factors, and use an area model to multiply them first.

Example 1: x 5

3	$3x$	15
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Example 2: y -2

x	xy	$-2x$
5	$5y$	-10

Area models work well for multiplying 2 factors. If there are more than 2 factors, use more models: one model for each multiplication.

b) Multiply the product from part a by the remaining factor in the original problem to get the final answer.

	y	-2
$3x$	$3xy$	$-6x$
15	$15y$	-30

	xy	$-2x$	$5y$	-10
3	$3xy$	$-6x$	$15y$	-30

(Responses will vary based on the two factors chosen first. Two possible solutions shown.)

Final answer: $3xy - 6x + 15y - 30$

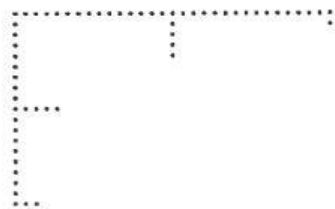
Additional Practice

Ⓕ $4(6m + 7n + 8) =$ _____



Ⓖ $2x(11y + 12z + 13) =$ _____

Ⓗ $(w + 7)(z + 5) =$ _____



Ⓘ $(a + 7)(2b + 4) =$ _____

Additional Practice Key

$$\textcircled{F} \quad 4(6m + 7n + 8) = \frac{24m + 28n + 32}{\begin{array}{ccc} 6m & 7n & 8 \end{array}}$$

4	24m	28n	32
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$$\textcircled{G} \quad 2x(11y + 12z + 13) = \frac{22xy + 24xz + 26x}{\begin{array}{ccc} 11y & 12z & 13 \end{array}}$$

2x	22xy	24xz	26x
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$$\textcircled{H} \quad (w + 7)(z + 5) = \frac{wz + 7z + 5w + 35}{\begin{array}{cc} z & 5 \end{array}}$$

w	wz	5w
7	7z	35

$$\textcircled{I} \quad (a + 7)(2b + 4) = \frac{2ab + 4a + 14b + 28}{\begin{array}{cc} a & 7 \end{array}}$$

2b	2ab	14b
4	4a	28

Today you learned to use area model thinking to apply the distributive property to multiplication problems and to translate between symbolic expressions and area models

For additional practice, click the link: [Solve Me Mystery Grids](#)