Agenda:

"I know what we're going to do today."

1) Bell Ringer: p. 43

2) go over HW (pages 18 and 34)

3) Module 3:
Lesson 4: Sums as products and products as sums

4) Homework: lesson 4 (1-7) (pages 49-51)

Jan 6-8:14 AM

Homework

1.

a. Write two equivalent expressions that represent the rectangular array below.

	2a	5
3	6a	15

$3(2a) + 3(5)$

$6a + 15$

$3(2a + 5)$

2. You and your friend made up a basketball shooting game. Every shot made from the free throw line is worth 3 points, and every shot made from the half-court mark is worth 6 points. Write an equation that represents the total amount of points, P, if f represents the number of shots made from the free throw line, and h represents the number of shots made from half-court. Explain the equation in words.

Jan 12-10:30 AM

3. Use a rectangular array to write the products in standard form.

a. $2(x + 10)$

$2x + 20$

	X	+10
2	2x	+20

b. $3(4b + 12c + 11)$

$12b + 36c + 33$

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4. Use the distributive property to write the products in standard form.

a. $3(2x - 1)$

$6x - 3$

b. $10(b + 4c)$

$10b + 40c$

c. $9(g - 5h)$

$9g - 45h$

d. $7(4n - 5m - 2)$

e. $a(b + c + 1)$

$ab + ac + 1a$

f. $(8j - 3l + 9)6$

$48j - 18l + 54$

g. $(40s + 100t) \div 10$

$\frac{40s}{10} + \frac{100t}{10} = 4s + 10t$

h. $(48p + 24) \div 6$

$\frac{48p}{6} + \frac{24}{6} = 8p + 4$

i. $(2b + 12) \div 2$

$\frac{2b}{2} + \frac{12}{2} = 1b + 6$

j. $(20r - 8) \div 4$

$\frac{20r}{4} - \frac{8}{4} = 5r - 2$

k. $(49g - 7) \div 7$

$\frac{49g}{7} - \frac{7}{7} = 7g - 1$

l. $(14g + 22h) \div \frac{1}{2}$

$\frac{14g}{\frac{1}{2}} + \frac{22h}{\frac{1}{2}} = 28g + 44h$

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5. Write the expression in standard form by expanding and collecting like terms.

PEMDAS

a. $4(8m - 7n) + 6(3n - 4m)$

$32m - 28n + 18n - 24m = 8m - 10n$

b. $9(r - s) + 5(2r - 2s)$

$9r - 9s + 10r - 10s = 19r - 19s$

c. $12(1 - 3g) + 8(g + f)$

$12 - 36g + 8g + 8f = 12 + 8f - 28g$

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Lesson 4: Writing Products as Sums and Sums as Products

p. 45

a-d Distributing

e-h Factoring

Classwork

Example 1

a. $2(x + 5)$	$2x + 10$
b. $3(x + 4)$	$3x + 12$
c. $6(x + 1)$	$6x + 6$
d. $7(x - 3)$	$7x - 21$
e. $5(x + 6)$	$5x + 30$
f. $8(x + 1)$	$8x + 8$
g. $3(x - 4)$	$3x - 12$
h. $5(3x + 4)$	$15x + 20$

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Exercise 1

Rewrite the expressions as a product of two factors.

a. $72t + 8$ $8(9t+1)$

c. $36z + 72$ $36(z+2)$ $9(4z+8)$ $12(3z+6)$ $2(18z+36)$

e. $3r + 3s$ $3(r+s)$

b. $55a + 11$ $11(5a+1)$

d. $144q - 15$ $3(48q-5)$

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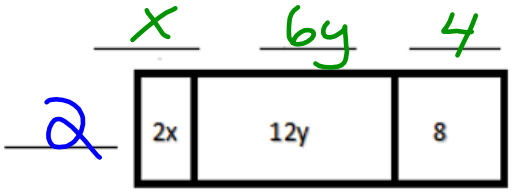
Example 2

Let the variables x and y stand for positive integers, and let $2x$, $12y$, and 8 represent the area of three regions in the array. Determine the length and width of each rectangle if the width is the same for each rectangle.



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Exercise 2

a. Write the product and sum of the expressions being represented in the rectangular array.

	12d	4e	3
2	24d	8e	6

$2(12d+4e+3) = 24d + 8e + 6$

b. Factor $48j + 60k + 24$ by finding the greatest common factor of the terms.

$12 = 12 \quad 12 \quad 12$

Factor (Factor)

$12(4j+5k+2)$

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Example 3 factor (factor)

For each expression, write each sum as a product of two factors. Emphasize the importance of the distributive property.

a. $2 \cdot 3 + 5 \cdot 3$ $\quad 3(2+5)$

b. $(2+5)+(2+5)+(2+5)$ $\quad 3(2+5)$

c. $x \cdot 3 + 5 \cdot 3$ $\quad 3(x+5)$

d. $(x+5)+(x+5)+(x+5)$ $\quad 3(x+5)$

e. $x \cdot 3 + y \cdot 3$ $\quad 3(x+y)$

f. $(x+y)+(x+y)+(x+y)$ $\quad 3(x+y)$

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Example 4

A new miniature golf and arcade opened up in town. For convenient ordering, a play package is available to purchase. It includes two rounds of golf and 20 arcade tokens, plus $3.00 off the regular price. There is a group of six friends purchasing this package. Let g represent the cost of a round of golf, and let t represent the cost of a token. Write two different expressions that represent the total amount this group spent. Explain how each expression describes the situation in a different way.

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Exercise 3

What is the opposite of $(-6v + 1)$?

$6v - 1$

Subtraction = Adding an opposite

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Example 5

Rewrite $5a - (a - 3b)$ in standard form. Justify each step, applying the rules for subtracting and the distributive property.

$5a + (-1a + 3b)$

$4a + 3b$

$5a - 1(a - 3b)$

$5a - 1a + 3b$

$4a + 3b$

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Exercise 4

Expand each expression and collect like terms.

a. $-3(2p - 3q)$

$-6p + 9q$

b. $-a - 1(a - b)$

$-1a - 1a + 1b$

$-2a + 1b$

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Homework

1. Write each expression as the product of two factors. Use example 3 to help you.

a. $1 \cdot 3 + 7 \cdot 3$ $3(1+7)$

b. $(1+7)+(1+7)+(1+7)$ $3(1+7)$

c. $h \cdot 3 + 6 \cdot 3$ $3(h+6)$

d. $(h+6)+(h+6)+(h+6)$ $3(h+6)$

e. $j \cdot 3 + k \cdot 3$ $3(j+k)$

f. $(j+k)+(j+k)+(j+k)$ $3(j+k)$

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2. Write each sum as a product of two factors. Use example 3 to help you.

a. $6 \cdot 7 + 3 \cdot 7$ $7(6+3)$

b. $(8+9)+(8+9)+(8+9)$ $3(8+9)$

c. $2y \cdot 3 + 4 \cdot 3$ $3(2y+4)$

d. $(x+5)+(x+5)$ $2(x+5)$

e. $f \cdot 6 + g \cdot 6$ $6(f+g)$

f. $(c+d)+(c+d)+(c+d)+(c+d)$ $4(c+d)$

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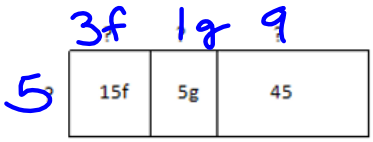
3. Use the following rectangular array to answer the questions below. Use example 2 to help you.



a. Fill in the missing information.

b. Write the sum represented in the rectangular array.

15f + 5g + 45

c. Use the missing information from part (a) to write the sum from part (b) as a product of two factors.

5(3f + 1g + 9)

4. Write the sum as a product of two factors. Use example 1 to help you.

Factor

a. $81w + 48$ 3(27w + 16)

b. $10 - 25t$ 5(2 - 5t)

c. $12a + 16b + 8$ 2(6a + 8b + 4)

4(3a + 4b + 2)

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5. Xander goes to the movies with his family. Each family member buys a ticket and two boxes of popcorn. If there are five members of his family, let t represent the cost of a ticket and p represent the cost of a box of popcorn. Write two different expressions that represent the total amount his family spent. Use example 4 to help you.

5(t + 2p) 5t + 10p

6. Write each expression in standard form. Use example 5 to help you.

a. $-3(1 - 8m - 2n)$ = -3 + 24m + 6n

b. $5 - 7(-4q + 5)$

5 + 28q - 35

28q - 30

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7. Combine like terms to write each expression in standard form.

a. $(r-s)+(s-r)$ $r-r$ $-s+s$ $=0$

b. $(-r+s)+(s-r)$ $-r-r+s+s$ $-2r+2s$

c. $(r-s)+(s-t)+(t-r)$ $r-r$ $-s+s$ $-t+t$ $=0$

d. $(-r-s)-(-s-r)$ $+s+r$ $-r+r-s+s=0$

Remember subtracting an expression is the same as adding opposites or distributing a -1.

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7. Combine like terms to write each expression in standard form.

a. $(r-s)+(s-r)$

b. $(-r+s)+(s-r)$

c. $(r-s)+(s-t)+(t-r)$

d. $(-r-s)-(-s-r)$

Remember subtracting an expression is the same as adding opposites or distributing a -1.

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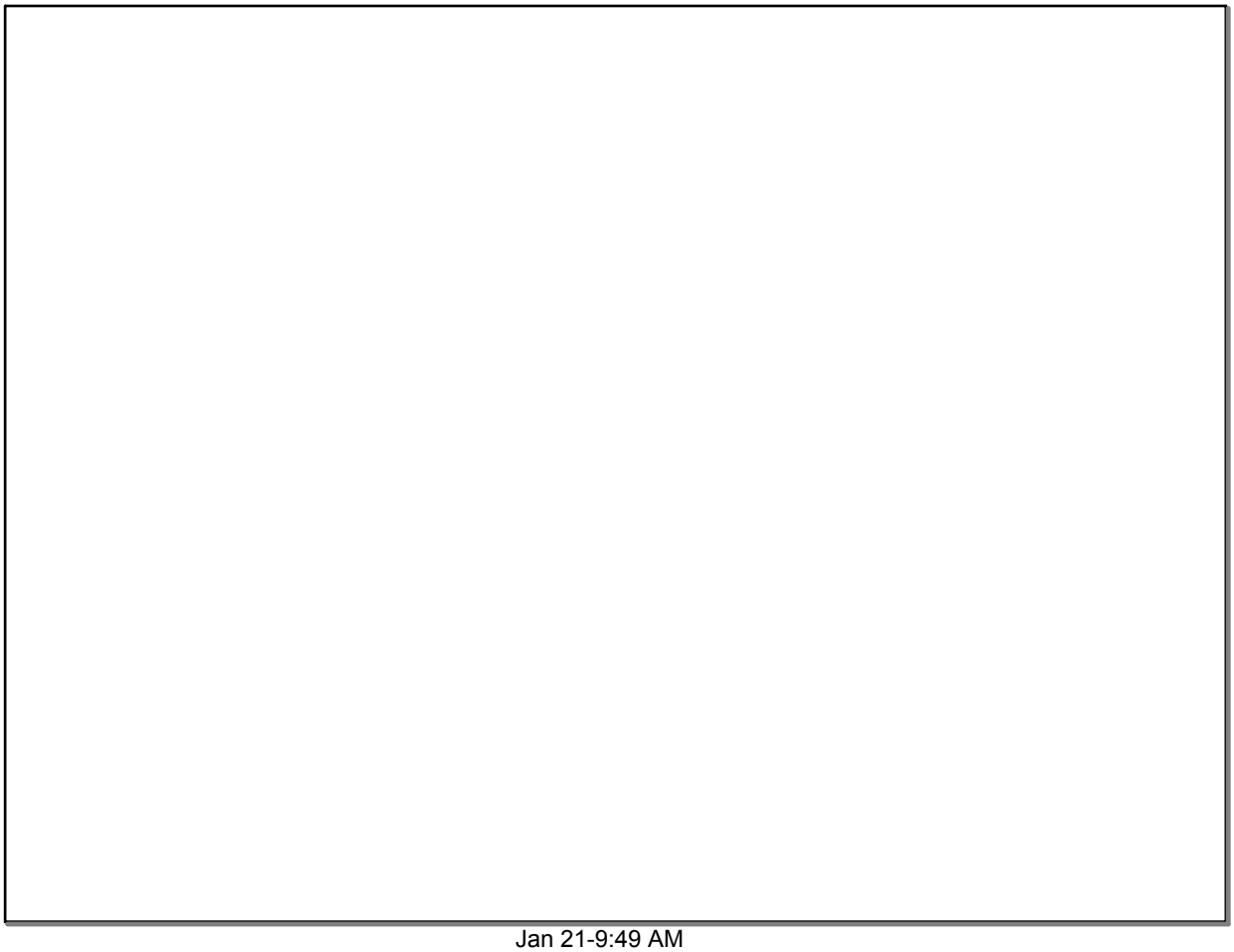

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