NAME:_____ Math 7.1

Mr. Rogove Date:_____

LEARNING OBJECTIVE: We will rewrite expressions as the product of two factors (G7M3L5)

CONCEPT DEVELOPMENT:

Remember that when we distribute, we multiply the term outside of the parentheses to the terms inside the parentheses:

$$3(x + 6) = (3 \cdot x) + (3 \cdot 6) = 3x + 18$$

Factoring as undoing Distribution: What if we started with $3x + 18$? Could we find the greatest common factor and write equivalent expressions?

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. $5(3x+4)$	$\frac{15x}{5} + \frac{20}{5}$

Using an Array Model

We can use an array model to rewrite expressions as well.

Examples:

	x	$4y$	3
4	$4x$	$16y$	12

$4x+16y+12$

$4(x+4y+3)$

	x	$3y$	5
2	$2x$	$6y$	10

$2x+6y+10$

$2(x+3y+5)$

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GUIDED PRACTICE:

Steps for Rewriting Expressions as the Product of Two Factors

1. Combine like terms (**if necessary)
2. Identify and factor out the greatest common factor of each term.

$15x + 27y - 12$ GCF: 3 $3(5x + 9y - 4)$	$4x + 18y - 10$ $2(2x + 9y - 5)$
* $42x - 9y + 3$ $3(14x - 3y + 1)$	* $24x + 32y - 8$ GCF: 8 $8(3x + 4y - 1)$ WE NEED THIS 1!!
Negative GCF $-3c - 51d + 81$ GCF: -3 $-3(c + 17d - 27)$	$-6x + 36y - 42$ GCF: -6 $-6(x + (-6y) - (-7))$ $-6(x - 6y + 7)$ NEGATIVE GCF
$2(x + 6) + 3x + 18$ $2x + 12 + 3x + 18$ $(2x + 3x) + (12 + 18)$ $5x + 30$ GCF: 5 $5(x + 6)$	$3x + 4(x + 2y) + 6y$ $(3x + 4x) + (8y + 6y)$ $7x + 14y$ GCF: 7 $7(x + 2y)$

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Steps for Rewriting Expressions as the Product of Two Factors

1. Combine like terms (**if necessary)
2. Identify and factor out the greatest common factor of each term.

4 different families were shopping for Halloween candy. They each purchased 2 bags of chocolate candy (kit kats) and 3 bags of sugary candy (skittles). Write two different expressions that shows how much candy these families purchased. Use the variable *c* for the chocolate candy and *s* for the sugary candy. What does each expression represent?

$4(2c + 3s)$ ← EXPRESSION 1

4 families; Candy that 1 family bought

$8c + 12s$ ← EXPRESSION 2

Mr. Chesley made Indian corn bouquets for each of the 9 teachers in the math department. Each bouquet had 3 ears of corn. He also gave each of his colleagues 1 miniature pumpkin and 4 gourds. Write two different expressions that shows how what Mr. Chesley bought for the math teachers . Use the variable *c* for the corn and *p* for the pumpkins and *g* for the gourds. What does each expression represent?

$9(3c + 1p + 4g)$

9 teaches; Each teacher

$27c + 9p + 36g$

Find the two factors by examining the array.

	3m	4n	8
2	$6m$	$8n$	16

$6m + 8n + 16$

$2(3m + 4n + 8)$

Find the two factors by examining the array.

	x	16y	3
5	$5x$	$80y$	15

$5x + 80y + 15$

$5(x + 16y + 3)$

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Independent Practice:

Steps for Rewriting Expressions as the Product of Two Factors

1. Combine like terms (**if necessary)
2. Identify and factor out the greatest common factor of each term.

$-6p + 9q$	$12x - 44y - 2z$
$-12x + 24y - 48$	$45 - 3c - 15d$
Target is having a special sale where if you purchase 3 cartons of milk and 2 packages of oreos, you can receive $3 discount off your total bill. 5 customers get this deal. Write 2 different expressions that would represent how much was spent using c for the cost of a carton of milk and p for the cost of a package of oreos. What do each represent? $5(3c+2p-3)$	Find the two factors by examining the array. $7x$ | $21y$ | 56

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Activating Prior Knowledge:

We can identify the greatest common factors of numbers.

24 and 28	18 and 30

Closure:

Rewrite the following:

$$-18 - 15x - 12y - 9x - 6y - 3$$

$-18 + (-15x) + (-12y) + (-9x) + (-6y) + (-3)$

$(-15x + (-9x)) + ((-12y) + (-6y)) + ((-18) + (-3))$

$-24x + (-18y) + (-21)$

$-3 \quad -3 \quad -3$

$-3(8x + 6y + 7)$

Teacher Notes:

Print out page S20 and go over it with students and assign problem set on page S22-23 as homework?

Maps to Lesson 4, except for negative distributive property…will do that as part of lesson 20a.