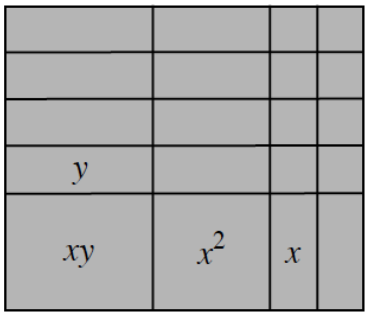
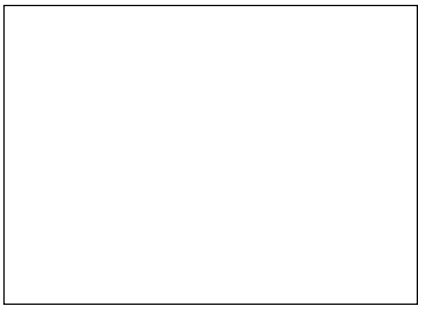
4.1.1 Resource Page Name: _____ Per:_____

4-1 a.



_____ = _____

4-1 b.



_____ = _____

4-2. The process of changing a sum to a product is called ***factoring.*** When an expression is written as a product, it is said to be in ***factored form***, and each of the expressions being multiplied is called a ***factor***. Can every expression be factored? That is, can you rewrite every sum as a product?

Investigate this question by using algebra tiles to build rectangles for the following expressions. For each expression, write an equation showing that the area as a sum equals the area as a product. If you cannot build a rectangle, be prepared to convince the class that no rectangle exists (and thus the expression cannot be factored).

$2x^2 + 7x + 6 =$ _____

$x^2 + 4x + 1 =$ _____

$6x^2 + 7x + 2 =$ _____

$2xy + 6x + y^2 + 3y =$ _____

4-3. Work with your team to write the sum and the product for the following area models. Are there any special strategies you discovered that can help you determine the dimensions of the rectangle? Be sure to share these strategies with your team.

a.

$2x$	5
$6x^2$	$15x$

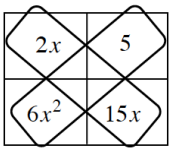
b.

$-2y$	-6
$5xy$	$15x$

c.

$-9x$	-12
$12x^2$	$16x$

4-4. While working on problem 4-3, Casey noticed a pattern in the diagonals of each area model. However, just before she shared her pattern with the rest of her team, she was called out of class! The drawing on her paper looked like the diagram below.



Describe a pattern that Casey may have found.

Does Casey's pattern always work?

Check whether her pattern works for all the 2-by-2 area models in problem 4-3.

a. _____ b. _____ c. _____

4-8. Previously, you have used the Distributive Property and common factors to change expressions written as sums into expressions written as products. For example:

The sum 12x + 18 may be rewritten as the product 6(2x + 3) because 6 is a common factor of both terms of the original expression.

Since x is a common factor of every term in the sum x2 + xy + x, the expression may be rewritten as the product x(x + y + 1).

Use the greatest common factor to rewrite each sum as a product. Homework Help ✎

a. 4x + 8 b. 10x + 25y + 5 c. $2x^2 - 8x$ d. $9x^2y + 12x + 3xy$

___(+) ___ (+ +) ___(-) _____(+ +)