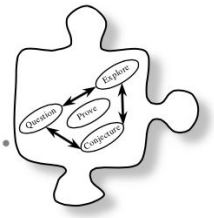
Lessons 1.2.2, 1.2.3 -- **I can use area models to multiply polynomials and show area as a *product* (multiplication) and a *sum* (addition).**

1.2.2 How can I predict the area?



Perimeters and Areas of Enlarging Patterns

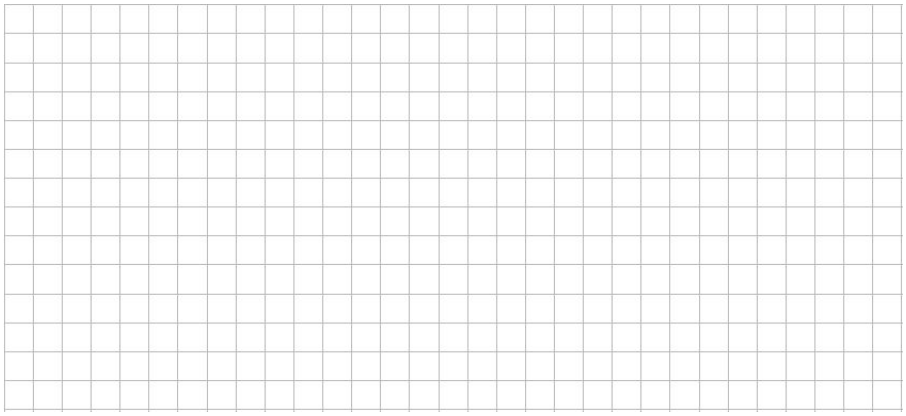
1-30 & 1-31

Draw figures 4 and 5 of your carpet squares.

Calculate the *perimeter* of each figure (1 through 5), and complete the table below.

Figure number	1	2	3	4	5	20
Perimeter (in units)						

Draw a graph of the data from your table.

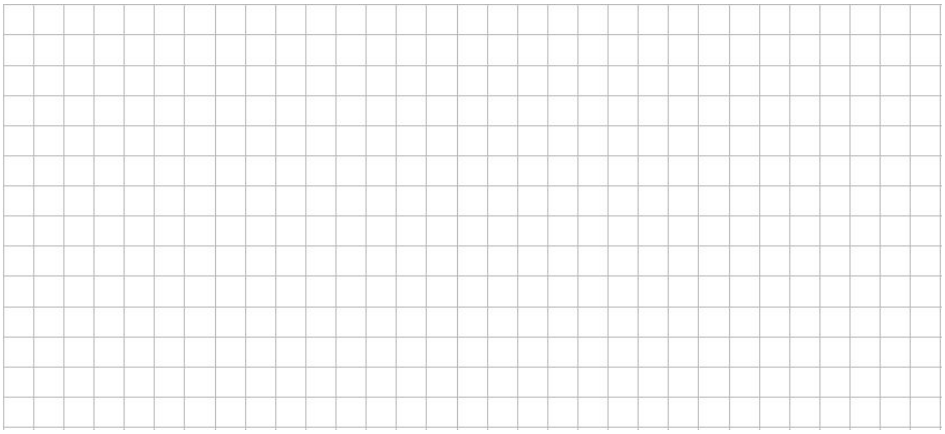


What is the equation showing the *perimeter* of each figure? _____

Calculate the *area* of each figure (1 through 5), and complete the table below.

Figure number	1	2	3	4	5	20
Area (in square units)						

Draw a graph of the data.



What is the equation showing the *area* of each figure? _____

1-32 & 1-35

Using your equations, what would the area and perimeter of figure 20 and figure 100 be?

Figure 20:

Area: _____

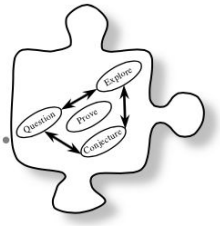
Perimeter: _____

Figure 100:

Area: _____

Perimeter:_____

1.2.3 How can I express area?

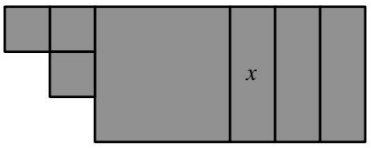


Area as a Product and a Sum

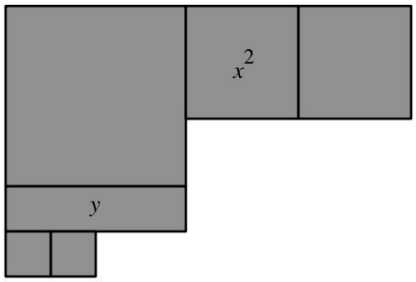
1-42

Consider the following polygons made from algebra tiles. Write a simplified expression for the perimeter and area of each below.

i.



ii.



i. Perimeter: _____

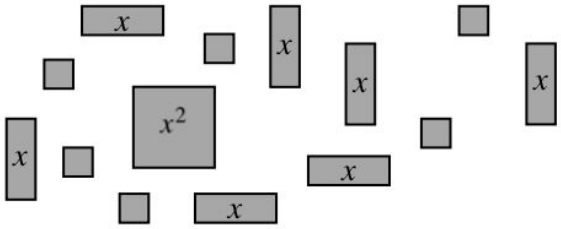
ii. Perimeter: _____

i. Area: _____

ii. Area: _____

1-43

Arrange the algebra tiles into one large rectangle with the x^2 piece on the bottom left corner. Draw your rectangle below.



Write the area of the rectangle as a *sum* of its parts.

Write the area of the rectangle as a *product* of its parts.

Show that these two expressions are equal. (Tip: *sum* = *product*.)

_____ = (_____) (_____)

1-44

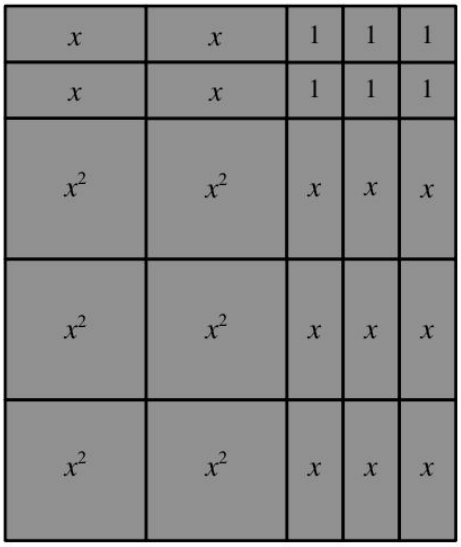
Using the algebra tiles, build a rectangle for each expression and draw it. (Tip: One expression is not possible.)

a. $x^2 + 8x + 12$

b. $4x^2 + 4x$

c. $2x^2 + 7x + 1$

d. $x^2 + 2xy + y^2$



1-45 to 1-46

Using the diagram at left, write an equation that shows that the area of the rectangle written as a sum is equivalent to the area written as a product.

_____ = (_____)(_____)

+ 2	$4x$	6
$3x$	$6x^2$	$9x$
	$2x$	+ 3

How does the area model to the left compare to the algebra tile rectangle and its expression?

1-47

Complete the following area model puzzles, and write the areas as a sum and a product.

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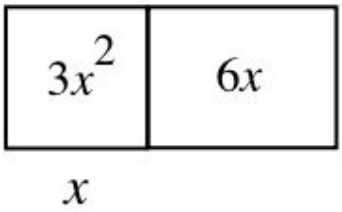
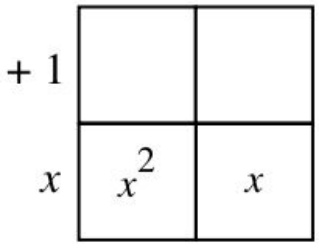
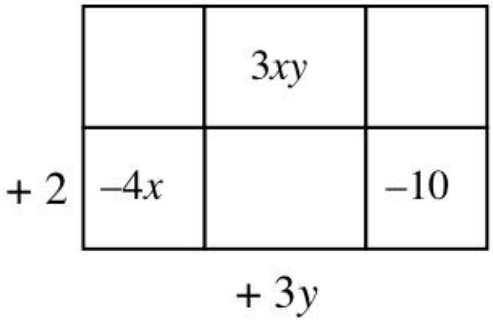


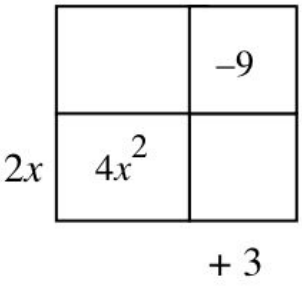
_____ = (_____) (_____)



_____ = (_____) (_____)



_____ = (_____) (_____)



_____ = (_____) (_____)