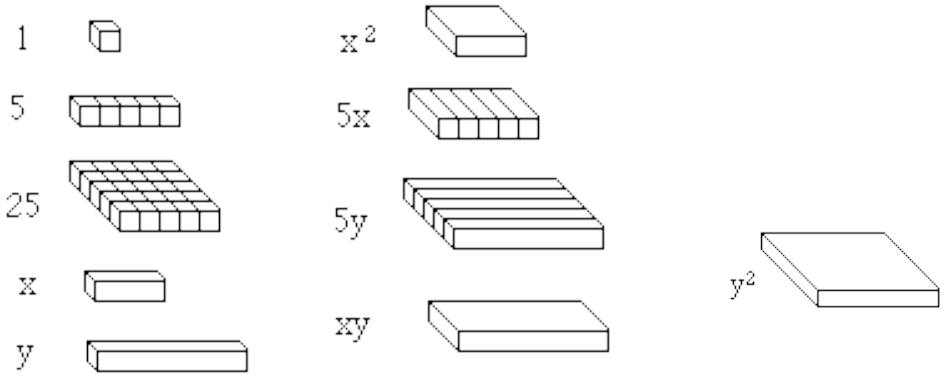
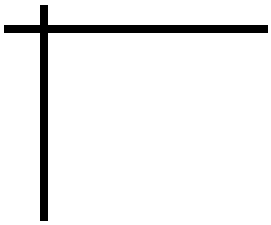
Math 306

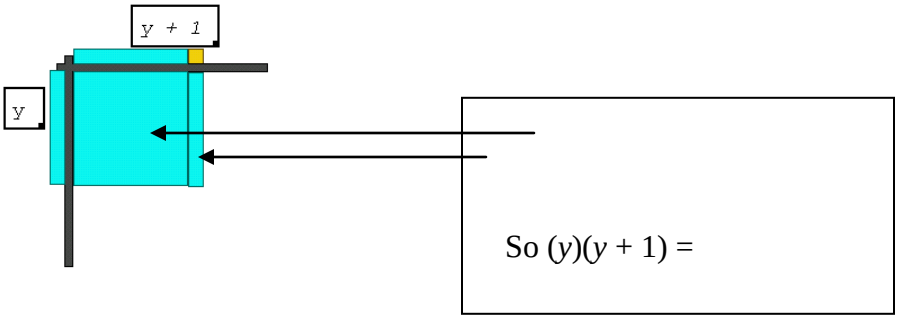
Algebra Lab Gear is a commercial version of algebra manipulatives. The manipulatives work well to model of the distributive law using the rectangular array approach.
The pictures below list the values for each piece.



Like the multi-base blocks, other manipulatives can be used to help students develop an understanding of arithmetic and algebra. Sketch 6 x 5 using the lab gear.



The picture below represents $(y)(y + 1)$. Determine the product by labeling the blocks inside the corner piece?



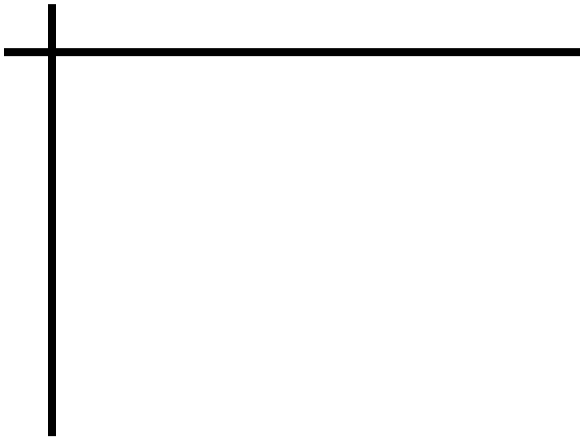
Use the lab gear to represent the expressions:

Sketch the problem and write out your results for #1-3, and just rite out your results for #4

1 $4(x + 2) =$

2 $(x + 3)(x + y) =$

3 $(y + 5)^2 =$



4. With out sketching work out the following.

$(y - 3)(y + 1) =$

Algebra Manipulatives

- They provide access to symbol manipulation for students who had previously been frozen out of the course because of their weak number sense.

- They provide a geometric interpretation of symbol manipulation, thereby enriching all students' understanding, and making a powerful connection to another part of mathematics.

- They support cooperative learning, and help improve discourse in the algebra class by giving students objects to think with and talk about. It is in the context of such reflection and conversation that learning happens.

(These three points are direct quotes by Henri Picciotto)

Others you observe:_____

_____

_____

Limitations

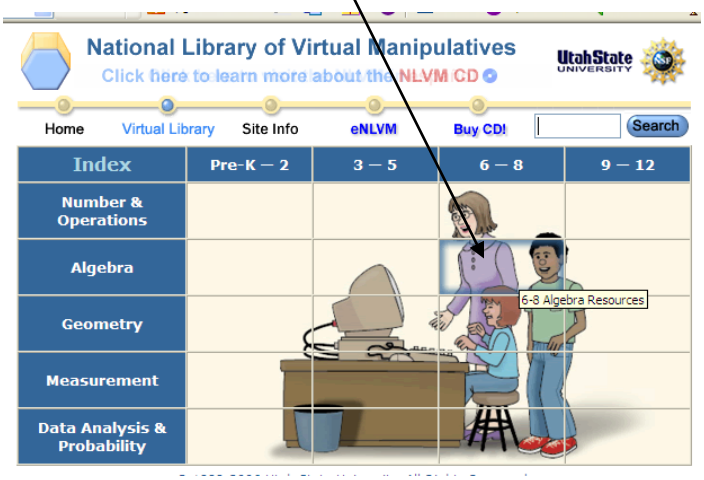
- They do not represent fractional nor negative values effectively
- They give the impression that $-x$ is negative
- They give the impression that x^2 is greater than x
- It is difficult for some students that have learned algebra as a collection of rules to see the geometric representation of equations or expression

Others you observe:_____

_____

_____

Go to the National Library of Virtual Manipulatives for Interactive Mathematics at http://matti.usu.edu/nlvm/nav/vlibrary.html
Select Algebra (Grades 6 - 8) and choose the Algebra Tiles activity.



Use Internet Explore as it has the necessary plug-ins to run the math java applets and try using the electronic version of Algebra Tiles

Complete the following problems by first sketching the tile representation and then simplify the expression:

1) $(x + 2)(y + 1)$

2) $(x + 3)^2$

3) $(x + y)(y + 2x + 1)$