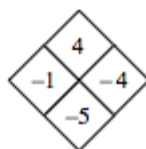
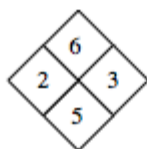
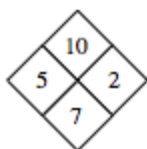


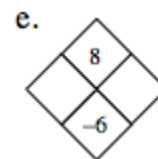
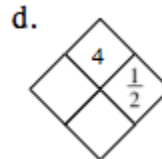
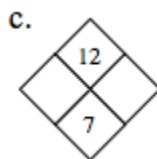
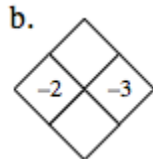
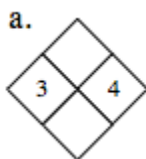
1-4. DIAMOND PROBLEMS

Finding and using a pattern is an important problem-solving skill you will use in algebra. The patterns in Diamond Problems will be used later in the course to solve other types of algebraic problems.

Look for a pattern in the first three diamonds below. For the fourth diamond, explain how you could find the missing numbers (?) if you know the two numbers (#).



Copy the Diamond Problems below onto your paper. Then use the pattern you discovered to complete each one.



2-1. Your teacher will distribute a set of algebra tiles for your team to use during this course. As you explore the tiles, address the following questions with your team. Be prepared to share your responses with the class.

How many different shapes are there? What are all of the different shapes?

How are the shapes different? How are they the same?

How are the shapes related? Which fit together and which do not?

2-4. Build each collection of tiles represented below. Then name the collection using a simpler algebraic expression, if possible. If it is not possible to simplify the expression, explain why not.

a. $3x + 5 + x^2 + y + 3x^2 + 2$

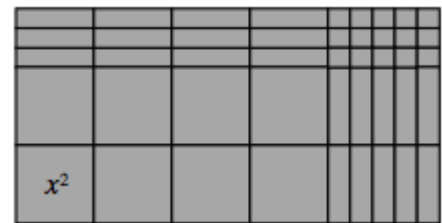
b. $2x^2 + 1 + xy + x^2 + 2xy + 5$

c. $2 + x^2 + 3x + y^2 + 4y + xy$

d. $3y + 2 + 2xy + 4x + y^2 + 4y + 1$

Jumbled Piles

3-65. Write the area as a *product* and as a *sum* for the rectangle shown at right.



3-66. Now examine the following diagram. How is it similar to the set of tiles in problem 3-65? How is it different? Talk with your teammates and write down all of your observations.

