Problem 1 – Dilation Example

Examine page 1.2. △*ABC* is the preimage and △*abc* is the image under a dilation with scale factor of 0.5. Examine the coordinates of the two triangles.

1. What do you notice about the coordinates of the preimage and image?

2. After reading page 1.3, write a matrix multiplication problem to determine the coordinates of the image given on page 1.2.

Problem 2 – Scaling Up or Down

On page 2.1, the polygon is dilated with the origin as the center. Use the up and down arrows to change the scale factor and observe the results.

3. Write a conjecture for how the scale factor, *k*, determines the size of the image.

4. Using your conjecture, write a matrix multiplication problem for △*DIR* where the image is larger. Determine the coordinates of the vertices of your image triangle. (Use *Scratchpad* to perform the matrix multiplication.)

5. Using your conjecture, write a matrix multiplication problem for △*DIR* where the image is smaller. Determine the coordinates of the vertices of your image triangle.

6. Using your conjecture, write a matrix multiplication problem for △*DIR* where the image is equal. Determine the coordinates of the vertices of your image triangle.

Extension – Fencing a Garden, Part II

7. A gardener has fenced in a garden as shown on page 3.1. The area of the garden is 1750 square feet. After a year, the gardener has decided that his garden is too big to maintain. He now wants the size of the garden to be 1,250 square feet. Help the gardener determine where his three fence posts should now be to create the garden.