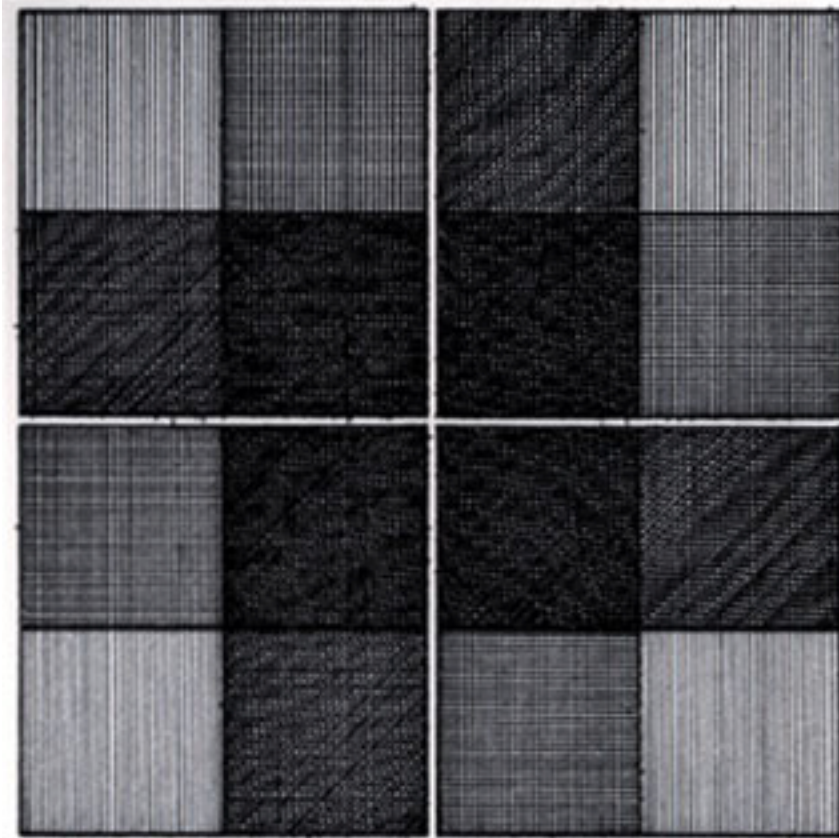# Rectangles in the Coordinate Plane

Sol LeWitt, Drawing Series—Composite, Part I–IV, #1–24, A+B(detail), 1969. © Estate of Sol LeWitt/Artists Rights Society (ARS), New York.

These materials were developed at the
Center for Technology in Learning
SRI International

Draw My Line

1. Work with a partner where you cannot see each other's work, but you can hear each other.
   a. On blank unlined paper, draw a line segment—anywhere, any length.
   b. Now tell your partner how to make exactly the same drawing BUT
      - You cannot show your drawing.
      - You cannot use any words for units, like inches or centimeters.
   c. Check to see how well your partner did.
   d. Write down some of the words you used to give instructions.

2. Do the same thing, but this time use the graph paper and switch roles. How did you use the graph lines to help you tell your partner what to draw?

Making Rectangles

Use the next page for your work.

1. Draw an x-axis and a y-axis and label the units. Do not put the origin in the middle of the page!

2. Draw two rectangles and label the vertices.
   a. One rectangle—"lined up" with the grid. Its sides are parallel to the axes.
   b. Another rectangle—"at a tilt." Its sides are NOT parallel to the axes.

3. Explain how you know each is really a rectangle.

<insert grid paper>

Making Rectangles II

Use the next page for your work.

In this activity, use only rectangles that have sides parallel to the axes.

1. Draw an x- and a y-axis and label the units. Do not put the origin in the middle of the page!

2. Draw 4 rectangles in different places on the coordinate grid. Label the vertices.

3. Look at the coordinates of the vertices for each rectangle. Look for patterns. Describe the patterns that you see, using words and symbols.

\<insert grid\>

Rectangle Strategy

Use the coordinate grid on the next page to play this game. Use only rectangles that are aligned to the grid.

RULES OF THE GAME
With a partner, take turns making vertices of a rectangle. You can place the points wherever you like, as long as they can be vertices of the same rectangle.

What's the strategy?
How many turns does it take before there is ONLY ONE rectangle you can make? Why?

<coordinate grid here>

Pick the Rectangles

1. Before you plot these points, decide which sets of 4 (a, b, c, d and e) can be the vertices of a rectangle and which cannot.

   a. (1, 4)   (3, 4)   (1, 10)   (3, 10)
   b. (-1, -1) (-1, 4)   (5, -1)   (5, 4)
   c. (1, 1)   (2, 2)   (3, 3)   (4, 4)
   d. (-2, 4)   (- 6, 4) (-2, -2) (-2, -2)
   e. (1, 1)   (-1, 1)   (-1, -1) (1, -1)

2. Plot the points for a-e. Were you right?