

## Roping in the Relationship: Areas and Perimeters

**Our mission:** To determine what rectangular shape will give us the maximum area for a given perimeter.

**Our materials:** We need a rope with a length of 16 units (knots are placed every two feet) and a chart to keep track of the dimensions/area of each rectangle. (You can discuss the chart and how to set it up when you give directions for the activity.)

**Activity:** Choose four students to be the vertices of the rectangle. If you decide to keep your chart on the board, choose another student to write in the information. Otherwise, have each student keep a chart for themselves. The vertices will change to make different shaped rectangles. Calculate the area for each different length and width. (Also, you may use students inside the square to represent one square unit per student.)

**Discovery:** Hopefully, your students will discover that the area will be maximized at the point where the rectangle is most symmetrical, in this case, a square.

**Sample Chart:**

| Length | Width | Area |
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