Geoboard Math

The geoboard provides a nicely constrained environment for mathematical exploration, and lends itself to many activities where students (and teachers!) can discover or apply important ideas in the K-12 curriculum.

11 × 11 Geoboard

Pick's Formula
Find the formula that relates the number of pegs inside a geoboard figure, the number of pegs on its perimeter (boundary), and the area of the figure.

Geoboard Squares
How may different-sized squares can you find on the geoboard? Find the area for each. (Can you do it without using the Pythagorean theorem? If so, you are rehearsing a proof of the theorem.)

Area 15
Find triangles with area 15, such that no side is parallel to the edge of the board.

Isosceles Triangles
Find isosceles geoboard triangles whose base is not parallel to or at a 45° angle from the edge of the board.

CircleTrig Geoboard

Angles and Triangles in a Circle
Make many triangles, and find their angle measures
   a. with two vertices on the circle, and one at the center
   b. with all vertices on the circle, and one side a diameter
   c. with all vertices on the circle, and no other constraint
This can lead to a proof of the inscribed angle theorem.

Trigonometry Basics
Find the sine, cosine, and tangent of angles, accurate to two significant digits, by placing rubber bands on the geoboard.

More About the Geoboard

All these activities are from *Geometry Labs,* a free download from my Web site (MathEducationPage.org). For a lot more information on geoboards, go to:
   https://www.mathedpage.org/geoboard

-- Henri Picciotto