

Make Geometry Visual - Geoboard

Making Shapes: The geoboard is a great tool for making shapes and exploring vocabulary. The shapes students create can also be used in graphing exercises. The same shapes can also be used with Venn diagrams.

A. **Quick Images:** In a class opener, put a shape on an overhead geoboard or use a document camera. Have the children copy the shape. As a variation turn the overhead off after a few seconds and have the students make the shape from memory. This helps to develop visual memory. The children can also do this activity with each other.

Quick Images with Partners: One student makes a shape then shows it to a friend for 5 seconds. The friend then makes the shape.

B. **Fences and Trees** (The geobands create fences and the pegs become trees). Example: Ask the children to make triangles with 1 tree (peg) inside of the triangle. Make triangles with 2, 3, 4 pegs inside of the fence. Compare triangles. What is the greatest number of pegs that can be inside of a triangle on a geoboard?

C. **Sorting Shapes:** Give students specific rules. For example, students can use one geoband, no loops or crossover, and the band must create a closed shape. Sorting possibilities might include:

- Triangles, squares, pentagons, etc. or 3 sided, 4 sided, 5 sided, etc.
- Right angles and no right angles
- Triangles or 4 or more sides
- Shapes with symmetry/ ones without symmetry

D. **Polygons:** Students can also discover or focus on the meaning of polygon after exploration and sorting. The teacher can sort the shapes the children have made with one rubber band and no other instructions according to polygons and non-polygons. Ask the students to reason how the shapes were sorted. Students can write their own rules for a polygon. **Ask students to create non-polygons** and explain their reasoning.

- E. **Making Shapes:** Call out different shapes for the students to make (hexagon, pentagon, square, etc.). Allow students to compare and sort their shapes. They will see there are many ways to make a shape of one name or more than one right answer. Children should record on geodot paper all the different ways they can make a triangle or all the different ways they can make a four-sided polygon. Let them discover the number of different size squares they can make on a geoboard. Transferring from geoboard to dot paper is difficult for some students. This is good for spatial sense.
- F. **Create Pictures:** Children enjoy being creative on the geoboards. Have them make things that can fly. These can be sorted and graphed. (Create physical graphs and transfer to pictographs or line plots. (butterflies, kites, rockers) Students can identify categories.
- G. **Symmetry:** The geoboard can be used to explore lines of symmetry, parallel lines, and perpendicular lines.
- H. **Congruent Shapes:** Students can also investigate congruent and similar shapes. They are making congruent shapes in copying someone else's shape. They can also make a shape that is similar to your shape. How can you prove the shapes are congruent?
- I. **Vocabulary:** Give students specific directions for making polygons. Use lots of vocabulary.
1. Make a 4 sided-shape with parallel sides.
 2. Make a triangle with a right angle (square corner).
 3. Make a triangle with 2 acute angles (smaller than a right angle)
 4. Make a polygon with 4 right angles.
 5. Make a polygon with 3 right angles.
- j. **Changing Shapes:** Create a polygon with 4 angles. Change your shape to a hexagon. Discuss changes. Describe new shapes.
- k. **Assessment:** Where are opportunities for assessment?

