

GEOBOARD AREAS

Performance Standard (7A/9A).G

Determine the area of a shape on a geoboard or dot paper and draw figures that meet given area conditions accordingly:

- *Mathematical knowledge*: know how to draw, determine and label the area of a geometric shape with specified properties,
- *Strategic knowledge*: use appropriate strategies to solve three problems, and
- *Explanation*: explain completely and clearly what was done and why it was done.

Procedures

1. Students should have some experience working with geoboard or dot paper prior to this task. Provide students with sufficient learning opportunities to develop the following skills in order to (7A) measure and compare quantities using appropriate units, instruments and methods and (9A) demonstrate and apply concepts involving points, lines, and planes:
 - Develop and discuss strategies to find the areas of combined shapes, and
 - Draw geometric shapes with specified properties.
2. Provide each student a copy of the "Geoboard Areas" task sheet and the rubric. Have students review and discuss the task to be completed and how the rubric will be used to evaluate it.
3. Have students solve the following problems. Do not help the students or guide their thinking.
 - (1) Find the area of a given geoboard figure.
 - (2) Draw a triangle with an area of 10 square units on the dot paper.
 - (3) Draw a quadrilateral that is not a parallelogram that has an area of 6 square units.
4. Evaluate each student's work using the rubric and its guide to determine the performance level. Give each student a score in each of the three categories. Part A should be scored separately, since it relates best to Standard 7A, and parts B & C can be scored together, as they relate to Standard 9A. Minor errors in computation include making errors in the actual addition, subtraction, multiplication, or division that result in wrong answers. Major errors including using the wrong values due to a lack of recognition that diagonal distance between dots are not equal to vertical or horizontal distances. Students with the correct numerical answer of 9 without the label of square units should be given a 3 in mathematical knowledge.

Examples of Student Work not available

Time Requirements

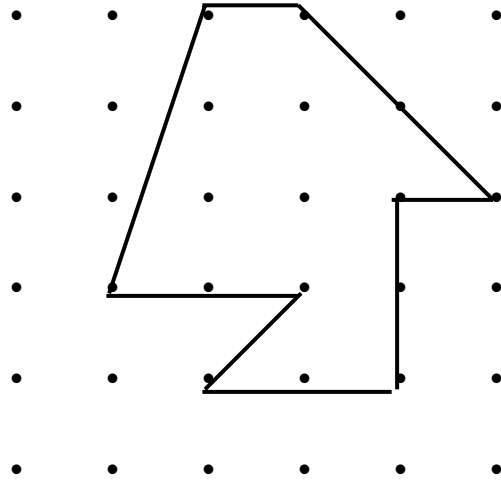
- 20 - 30 minutes

Resources

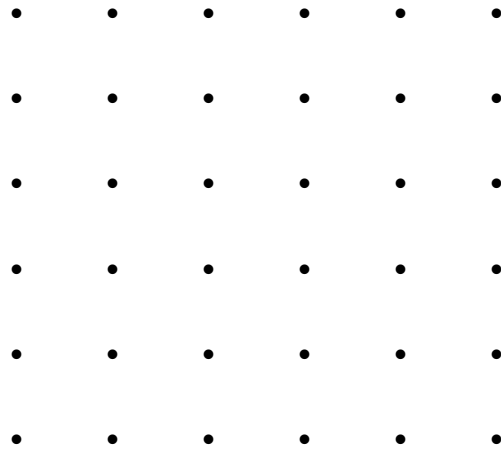
- Copies of the "Geoboard Areas" task sheet
- Geoboards may be helpful for exploration as they look for figures with areas to meet the given conditions, but dot paper will work equally well. (A dot paper template is included for your use, if needed.)
- Mathematics Rubric

GEOBOARD AREAS

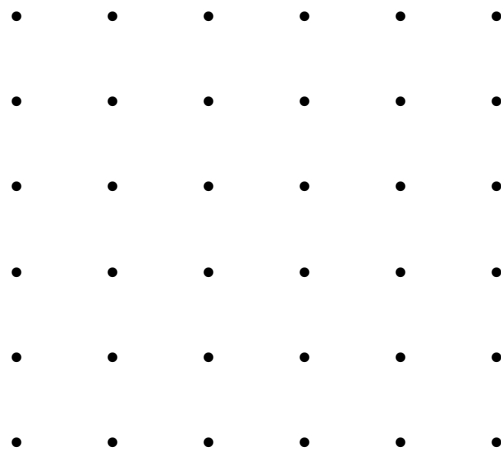
- A. Find the area of the geoboard figure shown here on dot paper. Explain your methods and justify your answer.



- B. Draw a triangle with an area of 10 square units on the dot paper. Explain your reasoning.



- C. Draw a quadrilateral that is not a parallelogram that has an area of 6 square units. Explain your reasoning.



GEOBOARD AREAS--EXTRA DOT PAPER

