



# ALEX

## ALABAMA LEARNING EXCHANGE



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This lesson provided by:

Author: Donna Sisk

System: Huntsville City

School: Monte Sano Elementary School

**Title:** Abundant Area

**Overview/Annotation:** This is an inquiry and technology-based lesson that allows students to discover the relationship between perimeter and area. Students apply problem-solving strategies to solve the real-life problem posed in this lesson. This lesson may easily be divided into sections and completed over several days if needed.

**Content Standard(s):**

EL(4)	24. Exhibit the habit of writing daily in academic, social, and/or personal situations.
EL(4)	31. Use computers for expression.
EL(4)	33. Organize and present information using a variety of media and student-produced text.
EL(4)	34. Exhibit skill in dramatization and other oral presentations.
TC(3-5)	11. Utilize general purpose productivity tools to facilitate learning throughout the curriculum.
TC(3-5)	12. Use a variety of media and technology resources to create and communicate knowledge products across the curriculum.
MA(4)	39. Compare measurements of length.
MA(4)	50. Distinguish between perimeter and area.
MA(4)	14. Measure length, width, weight, and capacity, using metric and customary units, and temperature in degrees Fahrenheit and degrees Celsius.

**Local/National Standards:** Students will:

- Use visualization, spatial reasoning, and geometric modeling to solve problems.
- Describe measurable attributes of objects and the units, systems, and processes of measurement.
- Apply appropriate techniques, tools, and formulas to determine measurements.
- Build new mathematical knowledge through problem solving.
- Solve problems that arise in mathematics and in other contexts. recognize reasoning and proof as fundamental aspects of mathematics.
- Organize and consolidate their mathematical thinking through communication.
- Communicate their mathematical thinking coherently and clearly to peers, teachers, and others.
- Recognize and apply mathematics in contexts outside of mathematics.
- Demonstrate proficiency in the use of technology.
- Use a variety of media and formats to communicate information and ideas effectively to multiple audiences.

**Primary Learning Objective (s):** Students will solve a real life application of perimeter and area to demonstrate their understanding of the relationship between these two concepts. Students will create a multimedia presentation to communicate their investigation, reasoning, and solution to the problem.

**Additional Learning**

**Objective(s):****Approximate Duration of the Lesson:** Greater than 120 Minutes**Materials and Equipment:** Geoboards, 48 one-inch squares of construction paper per group, inch-wide construction paper strips (4 per group), "What is the Greatest Area?" record sheet, "Abundant Area" Project Assignment, PowerPoint Planning worksheet, PowerPoint Presentation Rubric (see attachments)**Technology Resources Needed:** Computer, PowerPoint or equivalent multimedia software**Background/Preparation:** Students should be familiar with a multimedia software such as PowerPoint and should have already been introduced to the concepts of perimeter and area.

- Procedures/Activities:**
- 1.) Introduce lesson by reviewing perimeter and area and the formula for calculating each of these. The "Shape Explorer" website can be used for this review. Explain that today we will explore the relationship between perimeter and area.  
([Shape Explorer \[http://www.shodor.org/interactivate/activities/perimeter/index.html#\]](http://www.shodor.org/interactivate/activities/perimeter/index.html#))  
*This interactive web site provides computer generated shapes and allows students to input the perimeter and area for each shape and check their answers.*
  - 2.) Distribute geoboards. Ask students to make a rectangle with a perimeter of 8 units. What is the area of the rectangle? What will happen if I double the perimeter? Have them double the perimeter and describe what happens.
  - 3.) Allow students time to explore the relationship between perimeter and area using their geoboards. If students do not understand that a square is also a rectangle and they do not spontaneously make one, use questioning techniques to lead them to attempt different rectangular shapes with a constant perimeter.
  - 4.) Divide students into cooperative groups and distribute "Abundant Area" assignment sheet (see attachment) and discuss the problem and assignment. Distribute 48 one-inch squares, "What is the Greatest Area?" record sheets, and 4 strips of construction paper to each group. Explain that they will use the 48 one-inch squares to make a model of their picture frames and record their length, width, and area measurements on the "What is the Greatest Area?" record sheet. After they discover the greatest area possible, they are to use the construction paper strips to build their picture frame.
  - 5.) After completing their picture frames, students should plan (planning worksheet provided) then create their slideshow presentations (ex. PowerPoint) using the guidelines provided and practice their presentations. Presentations will be graded using rubric provided. A sample slideshow presentation that would receive a rating of "4" using the rubric is provided as an example of what might be expected from students.
  - 6.) Students will go to the "WickED QuizIt" web site and take a quiz on perimeter and area.  
([WickED QuizIt \[http://www.tki.org.nz/r/wick\\_ed/quizit/?id=85\]](http://www.tki.org.nz/r/wick_ed/quizit/?id=85))  
*An online quiz on perimeter and area.*

**Attachments:** \*\*Some files will display in a new window. Others will prompt you to download.  
[Abundant Area.doc](#)  
[What is the Greatest Area.doc](#)  
[Abundant Area.ppt](#)  
[Abundant Area PowerPoint Rubric.htm](#)  
[Slideshow Planning Sheet1.doc](#)**Assessment Strategies:** Quiz on perimeter and area at WickED QuizIt web site (see URL in Step 6), slideshow project/presentation (Rubric provided), cooperative group work (teacher observation)**Extension:** Students can create their problem-solving activity using a real-world application of perimeter and area. Students can draw floor plans for an addition to their school building that would provide the greatest amount of space and calculate the perimeter and area.**Remediation:** Provide students with different sized rectangles. Have students measure and record their length and width, then place a one-inch transparency grid on top and count and record the squares to determine area. Discuss relationship between the length and width and the formula for calculating area. What happens to the area as the length and width become closer to the same measurements? Why does this occur?**Accommodation:**

*Each area below is a direct link to general teaching strategies/classroom accommodations for students with identified learning and/or behavior problems such as: reading or math performance below grade level; test or classroom assignments/quizzes at a*

failing level; failure to complete assignments independently; difficulty with short-term memory, abstract concepts, staying on task, or following directions; poor peer interaction or temper tantrums, and other learning or behavior problems.

[Presentation of Material](#)

[Time Demands](#)

[Attention](#)

[Assisting the Reluctant Starter](#)

[Environment](#)

[Materials](#)

[Using Groups and Peers](#)

[Dealing with Inappropriate Behavior](#)

Be sure to check the student's IEP for specific accommodations.

**Modification:**

**Variations Submitted by  
ALEX Users:**

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