

GED 2002 Teachers' Handbook of Lesson Plans

Content Area Mathematics	Lesson Topic/Theme Geometry – Area of Squares and Rectangles	Correlation to Math Framework 05.04/05.16	Lesson Number - 48
Title: What's the Area? Objectives/Learner Outcomes At the end of this lesson, the learner will be able to: <ul style="list-style-type: none"> • Recall that area is measured in square units • Calculate the area for a given square or rectangle • Apply the area formula for use in a multi-step word problem 		Materials/Resources/Internet Sites/Handouts/Worksheets <ul style="list-style-type: none"> • Chart paper/white board • Markers • Rulers or tape measurers • Advertisement for flooring or carpeting • Double-sided handout: <ul style="list-style-type: none"> ▪ Handout – <i>Calculating Area – Side 1</i> ▪ Handout – <i>Using Area at Home Depot – Side 2</i> 	
Pre-Requisite Knowledge The learner should be able to: <ul style="list-style-type: none"> • Complete basic multiplication problems with whole numbers, decimals, and fractions • Use a ruler or tape measurer to find the length of certain objects 		Key Words <ul style="list-style-type: none"> • Formula • Area • Square units • Length • Width 	
Anticipatory Set/Introduction Say: Today, we are going to talk about how to calculate the area of a square or rectangle. Ask: Looking around the classroom, can you identify some objects that are squares or rectangles?			
Preview Questions for Lesson <ol style="list-style-type: none"> 1. Who has heard of the term <i>area</i>? 2. What are some objects that people might like to know the area? (Answers could include: houses, rugs, rooms, walls, towns, playgrounds, floors, etc.) 3. Who remembers how to find the length and width of an object? 4. What types of units can be used when measuring the length or width of an object? (Answers could include: inches, feet, yards, miles, centimeters, meters, kilometers, etc.) 			

Instructional Outline

Say: As you pointed out before, there are lots of objects that we could use to find the area of, such as this room, the school, or even the town.

Hand out: Rulers and worksheets.

Say: On the side marked **Calculating Area**, you are asked to identify and measure three square or rectangular objects in this room. Work with a partner to measure the length and width of these three objects. Fill in parts “A”, “B”, and “C” for each one. (Circulate about the room to ensure that students are staying on-task and are picking only square or rectangular objects.)

Ask: Who would like to share with us one of the objects that they measured? (Be sure to have students identify the object, the length, and the width of the object. Ask if any other students measured that same object.)

Say: The area formula is almost like a recipe – it tells us exactly what to use and what to do with those pieces.

Write: Area = L * W (on the board or chart paper)

Ask: What do you think the “L” stands for in the equation? (Answer: length) What do you think the “W” stands for in the equation? (Answer: width)

Write: Area = Length * Width (underneath where you wrote “Area = L * W”)

Ask for a volunteer. Using a tape measure, find the length and width of the white board or chart paper.

Write: Length = _____, Width = _____ (Fill in the appropriate measurements.)

Ask: What must be done now to find the area? (Answer: multiply the length times the width.)

Write: Area = _____ (Fill in the correct answer and units of measure.)

Explain to students that area is always measured in square units (i.e., square feet, square inches, square miles, square meters, etc.)

Say: Write the area formula somewhere on your worksheet. Next, using the formula, find the area for each of the three figures you have on your worksheet. Be sure to write down what numbers you’re multiplying for part “D” and give your answer in the space for part “E.” (Give students a few minutes to complete this task. Circulate the room to review their progress.)

Ask: Who would like to share how they found the area for one of their objects? (Have students state what the object was, what the length and width were, and how they arrived at the answer for the area. You may want to have multiple students share their answers.)

Process/Activities			
<p>Divide the class into small groups of three students. Show: an advertisement from the newspaper for something that talks about a store selling an item sold by area (e.g., tile, wood flooring, carpeting, etc.).</p> <p>Go through an example with the class which ultimately asks them to compute a total price. For example, if a room measures 10 feet by 10 feet and the homeowner wants to buy tile that costs \$2.25 per square foot, what would the cost be to tile that room? (Stress that students should first sketch a picture of the area, then find the area, and lastly find the price for the job.)</p> <p>Say: Flip over your worksheet to the side marked <i>Using Area at Home Depot</i>. With your group, decide how you'd figure out the cost for each job listed. Show your calculations and be ready to explain your steps. As you work together, be sure to talk about what you're doing.</p> <p>Walk around the room to monitor progress and to keep each group on task. Have volunteers share their answers and explanations. It may be helpful for students to sketch their figures on the board/chart paper and show their calculations.</p>			
Product/Evaluation/Summary			
<p>Check the students' answers on the <i>Home Depot</i> worksheet.</p> <p>Ask: Before finding the area of a square or rectangle, which two measurements must you know? (Answer: length and width)</p> <p>Ask: What is the area formula for a square or rectangle? (Answer: Area = Length * Width)</p> <p>Ask: What type of unit of measure always goes with area? (Answer: square units)</p>			
Teaching to Different Types of Learners			
	Visual	Auditory	Kinesthetic/Tactile
Learning Activity	Provide written directions, charts, and worksheets to students.	Incorporate activities that allow students to work together and discuss what they have done. Have students repeat answers or directions to you.	Students can draw pictures to show the figures and demonstrate how they do the calculations.
Special Differentiation Strategies	Use an overhead transparency to visually show the correct answers for the block activity rather than just providing the answers verbally. When providing	Check for understanding by asking questions when giving directions or assignments in writing.	Show students pictures of what's being discussed (i.e., rooms, floors, hallways, walls, yards, etc.). Allow students to get up and measure objects within the

	directions orally, have them in writing as well.		classroom (windows, desks, computer screens, books, etc.).
Evaluation	Allow learners to write their answers instead of saying them aloud.	Allow students to orally report what they have learned.	Allow students to use drawings to demonstrate their understanding of how to find the area of a square or rectangle.
<p>The Family and Adult Literacy Connection</p> <p>If students have school-aged children, have them complete similar examples to find the area of square or rectangular objects at home (i.e., books, doors, windows, cabinets, etc). Students can have their children use rulers or measuring tapes or have them assist in holding a measuring tape.</p> <p>Students can connect the concept of <i>area</i> to the real world by looking for examples presented in newspapers or magazines. Instructors can facilitate this by having periodicals that students can browse through in the classroom. A field trip to a home improvement store can also be organized.</p>		<p>ESE/ESOL Accommodations</p> <p>Partner students with a peer buddy who can facilitate discussion and model tasks. Allow for non-verbal responses such as pointing, nodding, or showing numbers on fingers.</p> <p>Show students how to use manipulatives or draw pictures to represent the problems that need to be solved.</p>	

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Calculating Area – Side 1

1. A. Object _____
B. Length _____
C. Width _____
D. Area calculation _____
E. Area _____

2. A. Object _____
B. Length _____
C. Width _____
D. Area calculation _____
E. Area _____

3. A. Object _____
B. Length _____
C. Width _____
D. Area calculation _____
E. Area _____

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Using Area at Home Depot – Side 2

1. A garage floor measures 15 feet long by 20 feet wide. Mr. Jones wants to paint the floor and has found a paint that costs \$4.55 per square foot. If he buys this paint, how much will the job cost him?
2. Sally is making curtains. The fabric she likes costs \$5.95 per square yard. If each curtain measures 2 yards wide by 1.5 yards long, how much will the material cost for one curtain?
3. Kenneth will be putting in wood flooring for his mother. At Home Depot, he can buy wood flooring for \$12.39 per square foot. If the hallway he needs to work on measures 4 feet wide by 15 feet long, how much will the flooring cost?
4. Holly's yard measures 35 feet by 100 feet. If Home depot sells bug spray at a cost of \$1.25 per square foot, how much will it cost to spray Holly's entire yard?
5. Bailey's garden measures 5 feet by 6 feet. If he buys fertilizer that costs \$2.30 per square foot, what's the total cost for the fertilizer?

***Bonus: If he fertilizes the garden 3 times a year, how much would he spend?