Title: Area of a Rectangle: Taking the Shortcut Further (A=L×W) Materials Needed

- Ruler or Tape Measure (metric and imperial)
- Pencil and Eraser
- Graph Paper or plain paper
- Small, identical square objects (e.g., LEGO bricks, foam tiles, or cut-out paper squares) – approximately 30-40 units
- Pre-made examples of rectangles with various dimensions (e.g., 2x5, 3x7)
- Real-world rectangular objects for measurement (e.g., phone, book, placemat, desk surface)

Learning Objectives (What We Will Learn) Building on our understanding of squares, by the end of this lesson, you will be able to:

- Review and state the area formula for a square ($A = S \times S$).
- Identify the unique characteristics of a rectangle (two pairs of equal, parallel sides).
- Understand and apply the formula $A = \text{Length} \times \text{Width}$ ($A = L \times W$) to calculate the area of any rectangle.
- Accurately measure and calculate the area of rectangular objects in the real world, remembering to use correct square units.

Success Criteria (How You Know You Succeeded) You know you succeeded when you can correctly identify the length and width of a new rectangular shape, use the $A = L \times W$ formula, and explain the difference between calculating the area of a square versus a rectangle.

## Part 1: Review and The Transition (Hook & Objectives)

### Reviewing Previous Learning (Area of a Square)

**Educator Talking Point:** Last time, we learned the shortcut for finding the area of a square. Why is $A = S \times S$ the perfect formula for a square? (Answer: Because all sides, or the Length and Width, are the same.)

**Quick Check Q&A:** If a square coaster has a side length of 4 inches, what is its area? (16 square inches).

**Bridge Language:** We used the idea of multiplying the sides because area is counting how many rows of square units fit inside a shape. Today, we are taking that exact same idea and applying it to shapes where the sides are *not* all equal: the rectangle.

### Introducing Rectangles

A rectangle is very similar to a square, but usually, it has a long side (Length) and a short side (Width). The key is that its opposite sides are equal, and it still has four right corners.

## Part 2: I DO – Modeling the New Concept (L x W)

### Activity 1: Demonstrating Length and Width

(I Do - Modeling)

Step 1: Draw a rectangle on graph paper or set up a space using your small square units that is clearly longer than it is wide (e.g., 5 units long by 3 units wide).

Step 2: Define the Dimensions. I will label the long side "Length" (L = 5 units) and the short side "Width"

(W = 3 units).

Step 3: Counting vs. Multiplying. Let’s count every square unit inside. (1, 2, 3... 15). The Area is 15 square units.

Step 4: Finding the Shortcut. Just like the square, we are counting 5 units across (Length) and we have 3 rows of 5 (Width). This is multiplication! $A = L \times W$.

**Modeling Connection:** The formula is the same fundamental idea as $S \times S$, but now we have two different numbers to multiply because the rows and columns are different lengths.

## Part 3: WE DO – Guided Practice (Applying L x W)

### Activity 2: Calculating Area Together

(We Do - Guided Practice)

Let's practice using the $A = L \times W$ formula for two pre-labeled rectangles.

1. **Rectangle A:** Length = 8 cm, Width = 2 cm.
    - What are we multiplying? (8 and 2)
    - $A = 8 \times 2 = 16$.
    - The area is 16 square centimeters.
2. **Rectangle B (Think-Pair-Share):** A driveway is 10 feet long and 5 feet wide.
    - What is the formula? ($A = L \times W$)
    - $A = 10 \times 5 = 50$.
    - The area is 50 square feet.

### Formative Assessment Check

Quick Check: If you calculate the area of a shape and the answer is 30, and you know the Length is 6, what must the Width be? (5. Hint: $6 \times ? = 30$).

## Part 4: YOU DO – Independent Application (Measurement & Calculation)

### Activity 3: Measure the Real World

(You Do - Independent Application)

You are now responsible for calculating the area of two rectangular objects near you (e.g., a book, a screen, a sheet of paper).

Step 1: Identify and Measure. Using your ruler or tape measure, identify two rectangular objects. Measure the longest side (Length, L) and the shortest side (Width, W).

Step 2: Calculate the Area. Record your findings in a chart:

| Object | Length (L) | Width (W) | Formula (L x W) | Total Area (with units) |
|---|---|---|---|---|
| Object 1: (e.g., Book) | | | | |
| Object 2: (e.g., Desk surface) | | | | |

### Success Guidance:

- Remember that the Length and Width must be measured using the same unit (inches or centimeters).
- Your final answer MUST include the unit, and the word "square" (e.g., 40 square inches).

## Part 5: Closure and Progression Recap

### Review Discussion

**Educator Talking Point:** We now know how to find the area for both squares and rectangles. If the side lengths are 5 and 5, which formula do we use? (Both work! $S \times S$ or $L \times W$). If the side lengths are 5 and 7, which formula must we use? ($L \times W$).

**Learner Recap:** Have the learner state the formula for a rectangle and demonstrate measuring the length and width of a common object (like a pencil box).

### Summative Assessment (Exit Ticket)

A builder needs to tile a rectangular bathroom floor that is 9 feet long and 4 feet wide. What is the total area the builder must cover with tiles?

(Show your work: $A = L \times W$)

(Answer: 36 square feet)

## Differentiation and Extensions

### Scaffolding (Support for Struggling Learners)

- **Visual Aid:** Provide pre-drawn rectangles on large graph paper grids, where the student only needs to count the number of squares along the L and W sides, and then multiply.
- **Formula Card:** Keep a clear card visible showing $A = S \times S$ and $A = L \times W$ with explanations of when to use each.

### Extension (Challenge for Advanced Learners)

- **Finding the Missing Dimension:** If a rectangular poster has an area of 72 square inches, and its width is 8 inches, what is the length? (Introduces simple division: $72 \div 8 = 9$ inches).
- **Compound Challenge:** Give the learner a shape made up of two attached rectangles. Ask them to calculate the area of each smaller rectangle separately and then add the two areas together to find the total area of the complex shape. (This is the logical next step for the overall learning series).
- **Area vs. Perimeter:** Challenge the learner to calculate both the Area ($L \times W$) and the Perimeter ($L+W+L+W$) of a given rectangle to reinforce the difference between measuring space vs. distance around.