Minecraft Architecture: Mastering Perimeter and Area

Materials Needed

- Graph paper (or a printed grid)
- Colored pencils or markers (Green for grass, Brown for wood/fences)
- Minecraft game (optional for the "You Do" phase) or physical building blocks (LEGO)
- A ruler

Learning Objectives

By the end of this 20-minute session, Albie will be able to:

- Define **Perimeter** as the distance around the outside of a shape (like a fence).
- Define **Area** as the space inside a shape (like the floor).
- Calculate the perimeter and area of rectangular structures to plan a Minecraft build.

1. Introduction: The Creeper Problem (3 Minutes)

The Hook: "Albie, imagine you just found two rare Pink Sheep in Minecraft! You need to build a pen for them immediately because the sun is going down and Creepers are starting to spawn. But here is the problem: You only have a certain number of fence pieces in your inventory. If you build the pen too big, you'll run out of wood. If you build it too small, your sheep won't have enough grass to eat!"

The Goal: "Today, we are going to become Minecraft Architects. We will learn how to use math to plan our builds perfectly so we never waste blocks!"

2. Instruction: The "I Do" Model (4 Minutes)

Talking Points:

- **Perimeter:** "Think of the Perimeter as the 'Fence.' It's the edge. To find it, we just count the blocks along the outside walls."
- **Area:** "Think of the Area as the 'Grass.' It's the blocks inside where your sheep can walk. To find it, we multiply the length times the width (or count all the squares inside)."

Demonstration: Draw a rectangle on graph paper that is 3 squares wide and 5 squares long.
• Count the edges: 3 + 5 + 3 + 5 = 16. "The Perimeter is 16 blocks!"
• Count the inside: 3 rows of 5 = 15. "The Area is 15 blocks!"

3. Guided Practice: The "We Do" Model (5 Minutes)

Activity: Let's plan a small starter hut together on your graph paper.

1. "Let’s draw a square house that is 4 blocks by 4 blocks." (Wait for Albie to draw).
2. "If we want to put a torch on every outside block to keep it bright, how many torches do we need? Let's count the **Perimeter**." (Help Albie count: 4+4+4+4 = 16).
3. "Now, we need to craft wooden planks for the floor. How many floor blocks go inside? That’s the **Area**." (Help Albie calculate: 4 x 4 = 16).
4. **Quick Check:** "What happens if we make the house 5 blocks long but keep it 4 blocks wide? Does the Area get bigger or smaller?"

4. Independent Practice: The "You Do" Model (6 Minutes)

The Mission: "Design the ultimate 'Mob-Proof Garden.' Use your graph paper to draw a rectangle. You choose the size, but there is one rule: You only have **20 pieces of fence** (Perimeter) to use."

- **Step 1:** Draw your garden on the grid.
- **Step 2:** Label the Perimeter (make sure it's 20 or less!).
- **Step 3:** Calculate the Area to see how many flowers/crops you can fit inside.
- **Step 4:** Color it in! Use green for the area and brown for the perimeter.

5. Conclusion & Recap (2 Minutes)

Review: "Great job, Architect Albie! Tell me in your own words: if I'm building a wall around a castle, am I measuring Perimeter or Area?" (Answer: Perimeter). "If I'm painting the floor of my throne room, am I measuring Perimeter or Area?" (Answer: Area).

Success Criteria: Albie can show his blueprint and explain how he calculated the two numbers.

Real-World Connection: "Next time we go to the store, let's look at a rug. The fuzzy part is the Area, and the trim on the edge is the Perimeter!"

Differentiation & Adaptability

- **For a Challenge:** Ask Albie to calculate the "Volume" by adding a height. If the house is 3 blocks tall, how many total blocks are in the walls?
- **For Support:** Use physical LEGO bricks. Let him build the fence physically and then count the "pips" on the blocks to find the measurements.
- **Digital Option:** If preferred, Albie can do the "You Do" section directly inside Minecraft using a flat world, then write the math on a sign in-game.