

Lesson Plan: Be the Architect of Your Own Room!

Materials Needed:

- Graph paper (at least 2-3 sheets)
 - A measuring tape (a retractable one works best)
 - Pencil and eraser
 - Ruler
 - Scissors
 - Colored pencils or markers (optional)
 - A clipboard or book to press on while measuring and writing
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Learning Objectives:

By the end of this project, you (Ollie) will be a master designer, able to:

1. Accurately measure the dimensions of a real-world space and its contents.
 2. Understand and apply a measurement scale (1 square : 10 cm) to convert large measurements into a small, manageable drawing.
 3. Create an accurate 2D floor plan and movable furniture models.
 4. Use your scale model to brainstorm, test, and choose the best possible layout for your room.
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Part 1: The Secret Agent Mission - Measure Your Space (20 minutes)

Your first mission, should you choose to accept it, is to gather intelligence on your room. You need exact measurements! We will measure everything from a "bird's-eye view," meaning we only need the length and width (the footprint) of things.

1. **Measure the Room's Width and Length:** Using your tape measure, find the length of the two main walls. It's easiest to measure along the bottom of the wall (the skirting board). Write these numbers down.
 - *Example:* Width = 350 cm, Length = 420 cm.
2. **Measure the Doorway:** Measure the width of your door opening. You'll also need to note which wall it's on and how far it is from the corner. This is important so you don't put a bookshelf where your door needs to swing open!
 - *Example:* Door is 80 cm wide and starts 30 cm from the left corner.
3. **Teacher Tip:** Always double-check your measurements to be sure! Accuracy is key for an architect.

Part 2: The Shrinking Ray - Understanding Scale (10 minutes)

We can't fit your actual room on a piece of paper, so we need to shrink it down. We will use a **scale**. Our secret scale is:

1 square on your graph paper = 10 centimeters in your real room.

This means for every 10 cm you measured, you will draw a line that is 1 square long on your paper.

- To figure out how many squares you need, you just divide your real measurement (in cm) by 10.
- **Example Calculation:** If your wall is 350 cm long, you do $350 \div 10 = 35$. So, that wall will be 35 squares long on your graph paper!

Your Turn! Take your room's width and length measurements and divide each by 10 to see how many squares long they will be. Write this down.

Part 3: The Blueprint - Drawing Your Room (15 minutes)

Now you get to draw the floor plan! This is the foundation of your design.

1. **Draw the Walls:** Using your ruler and pencil, carefully draw the outline of your room on the graph paper using the number of squares you just calculated. Make sure your corners are neat right angles.
2. **Add the Door:** Mark where your door is. Use your measurements to place it in the correct spot. Draw a curved line (like a rainbow) to show which way the door swings open into the room. You can't put any furniture in the "swing zone"!

Part 4: The Game Pieces - Measuring and Creating Your Furniture (25 minutes)

A room isn't a room without furniture! Now we create the movable pieces for your design.

1. **Measure Your Furniture:** Just like you did with the room, measure the length and width of each major piece of furniture you want to include (your bed, desk, bookshelf, dresser, etc.). Write down all the measurements.
2. **Do the Scale Math:** For each piece of furniture, divide its length and width by 10 to figure out how many squares it will be on the graph paper.
 - *Example:* Your bed is 100 cm wide and 200 cm long.
 - Width: $100 \div 10 = 10$ squares.
 - Length: $200 \div 10 = 20$ squares.
3. **Draw and Cut:** On a *separate* sheet of graph paper, draw the rectangles for each piece of furniture using their scaled-down sizes. You can label each one ("Bed," "Desk") and even color-code them.
4. **Cut Them Out:** Carefully cut out your paper furniture pieces. These are now your movable 2D models!

Part 5: The Fun Part - Design Your Dream Layout! (20+ minutes)

This is where your creativity takes over! Place your furniture cut-outs inside your room blueprint. Try as many different combinations as you can think of.

Ask yourself some designer questions:

- Where does the morning light come from? Do I want my desk there?
- Is there a clear path to walk from the door to my bed?
- Does this layout give me more floor space for activities?
- Can I open my closet and drawers easily?

Don't be afraid to try silly ideas! Sometimes the strangest layout is the most brilliant. When you find

a layout you love, you can take a picture of it or tape the pieces down gently.

Reflection and Extension (Designer's Choice):

- **Challenge 1 (The Detailer):** Measure and add windows to your blueprint. How does the window placement affect where you put your furniture?
- **Challenge 2 (The Mathematician):** Calculate the total area of your room in square meters (Area = Length x Width). Then, calculate the area of each piece of furniture. How much of your floor space is open?
- **Challenge 3 (The Presenter):** Once you find your favorite layout, explain why you chose it. What problems did it solve? What makes it better than your old layout?