

Scale

Suggested Age: 5-7

Time: 15 minutes

Scale drawings are useful for many things. Many times, small drawings are done before the larger model is built in order to make sure that everything will go as planned. Imagine buying a sofa and bringing it home only to find that it won't fit in the room!



In this activity we will:

- See how to utilize scale in your life, specifically in arranging a room full of furniture.

Materials

- Graph paper or blank computer paper
- Pencils
- Colored pencils or crayons
- Scissors
- Meter stick
- Tape
- Calculator

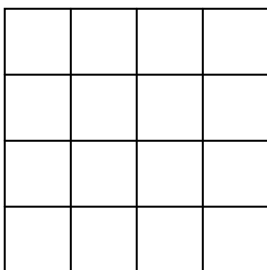
Safety

Be careful not to cut yourself when using the scissors. They can be very sharp. Also be careful when using the meter stick so that you do not scratch the furniture.

Preparation

If you do not have graph paper, you will need to make your own:

1. On two sheets of paper, you will need to make graph paper with spacing of one centimeter. To do this, use your ruler to measure every $\frac{1}{4}$ inch along each side and make a mark. Connect the marks that are directly across from each other to make a grid. See below.



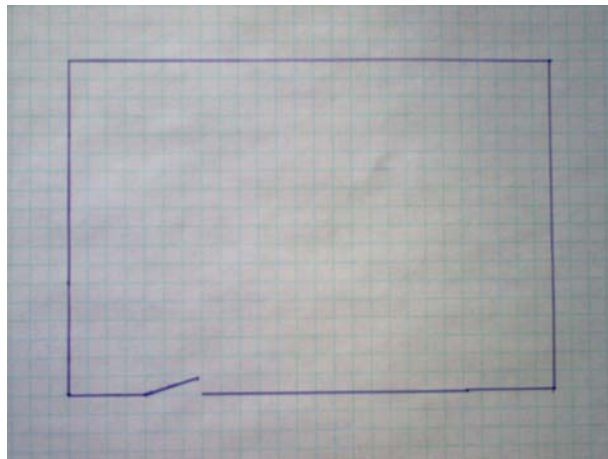
Pre-Activity

Discuss with the children their ideas on the best way to arrange a living room. Should you just start moving furniture around? If you do this, is it guaranteed that the furniture will fit where you want it to be? If it doesn't fit, then what do you do? Is there a better way to think about moving furniture around? How about when you go to buy new furniture? How do you know it will fit? This activity will help you think about these ideas.

Activity

When architects build buildings, they first must come up with a set of plans of how it will be constructed. Similarly, when furniture is purchased, it must be confirmed that each piece will fit into the room.

- The scale to be used is that each block ($\frac{1}{4}$ inch) is equal to 1 foot. For this activity, we will assume that the room is a living room with measurements of 18 feet by 26 feet. Thus, to create your room, use 18 blocks on the short edge and 26 blocks along the long edge (shown below).
- The room has one door, measuring 36 inches (3 feet) wide. Draw this in your room. The door may be placed at any point along the wall of your choice and should be drawn as an angled line if a door exists or a blank space if it is just a doorway (shown below).



- Measure the pieces of furniture in the room (in inches) and round to the nearest inch. Be sure to measure how wide and long they are. Record these on the furniture measurement sheet attached. A second person to help would be useful when measuring the larger furniture.
- On the second sheet of graph paper, draw and label each piece of furniture with 12 inches equaling 1 block. Make sure to leave at least one empty block between each piece. Color the furniture in if you would like to.



- Cut out each piece of furniture.
- Arrange the furniture in the room by placing a small piece of rolled tape on the back of each piece and sticking it in the room. Be sure to arrange the furniture logically.
- Try finding alternative ways to arrange the furniture within the room.

Extension Activity

1. Measure your living room and furniture at home and try to find a different way to arrange the furniture. Do so only with your parents' permission and be careful not to damage the furniture.

References

http://en.wikipedia.org/wiki/Architect's_scale

<http://science.nasa.gov/ssl/pad/solar/tutorials/lessons/solmod1.htm>

Furniture Measurement Sheet

Living room Furniture:

Couch/Sofa

Loveseat

Chair

Entertainment Center / TV Stand

Coffee Table

Furniture Measurements

Living room Furniture:

Couch/Sofa – 72 inches long by 36 inches deep

Loveseat – 60 inches long by 40 inches deep

Chair – 45 inches long by 35 inches deep

Entertainment Center / TV Stand – 38 inches long by 28 inches deep

Coffee Table – 46 inches long by 22 inches deep