

Exploration 6

Communicating How a Building Works

Architects commonly use drawings to explain to people how a building will be used (floorplans), how it will stand up (sections), and how it will look (elevations). You can use a simple but noble vegetable, a bell pepper, to help students understand these different types of drawings.

We were inspired by the pepper materials we found at the Architecture in Education website to develop this exploration—you can find great lesson starts there, too <http://www.aiaphila.org/aie/>

Materials:

- Bell peppers
- Paring knife
- Paint or ink
- Something to draw with
- Something to draw on
- Pie plate
- Paper

Objective:

After printing and analyzing “plans, sections, and elevations” of a green pepper, students will identify and discuss graphic conventions used in architectural drawings.

Standards:

- Arts: NA-VA: 3, 6
- English: NL-ENG: 4, 7, 12
- Mathematics: NM-PROB.REP 3; NM-GEO: 1, 3; NM-PROB.CONN: 3
- Science: NS: 3, 5, 7
- Social Studies: NSS-G 1

Procedures:




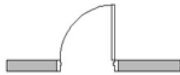

- Begin by discussing plans, sections, and elevations as way of communicating how a building works.
- Introduce a bell pepper as a model of a building. The pepper’s outer walls are like the outer walls of a house. The pepper’s inner walls like those inside of a house separating rooms.
- Plans

A plan is a two dimensional view of a space, such as a room or building. It is a view of the space from above, as if the space was cut through horizontally at the windowsill level with the upper half removed. You are looking down at the floor.

- Make a plan

- Cut one pepper in half horizontally, so you can see the **plan** of the pepper. Dip the cut pepper into paint in the pie pan and make a print on paper demonstrating a plan of the pepper. The thick lines on the paper indicate the walls of the pepper.
- Cut a notch in the pepper. Re-dip the cut pepper into the paint in the pie pan. Make a print demonstrating the plan on the paper with the pepper. The notch should read as an opening in the outer wall of the pepper. Discuss how the opening could be read as a door or a window.
- Print a few more plans with the opening and discuss ways you could graphically indicate if the opening were a door or a window. Then review some basic floor plan symbols:



- **Wall** - This is the symbol for a solid wall. The symbol portrays the wall's relative thickness. 
- **Partial Height Wall** - Symbol for low wall that doesn't go all the way to the ceiling. 
- **Window** - Symbol for glass window in a solid wall. 
- **Door Swing** - Indicates direction the door opens, and location of door knob. 
- **Sliding Glass Door** - Symbol for sliding glass door in a solid wall indicating which panel slides. 

- Draw these symbols separately, then as part of a pepper plan.

- Elevations

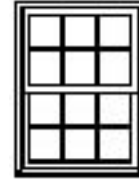
An elevation is a view of a wall as if you were standing back, looking directly at the wall. This is a flat, two-dimensional view. Only the height



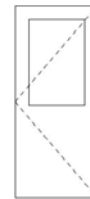
and width are obvious. This view of the wall shows items that might not be clearly shown in plan. This could be signs, window sizes, or a finish pattern that is applied on the wall.

- Make an elevation
 - Cut a pepper in half vertically and you can remove the face or **elevation** of the pepper.
 - Review some basic elevation symbols and textures:

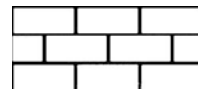
- **Window** – This is a symbol for a double hung window with 6 panes of glass in the upper and lower sections



- **Door** – This is a symbol for a door with one window in it. The dashed lines indicate the direction of the door swing



- **Bricks** – this is the pattern that architects use to indicate bricks



- Section
A section is view that shows the building as if a slice has been made through it and a portion removed. The inner components are then exposed. Typically, the section is shown as a vertical cut.

- Make a section
 - Cut one pepper in half vertically, so you can see the **section** of the pepper. Dip the cut pepper into paint in the pie pan and make a print on paper demonstrating a section of the pepper. The thick lines on the paper indicate the walls of the pepper.
 - Cut a notch in the pepper. Re-dip the cut pepper into the paint in the pie pan. Make a print demonstrating the section on the paper with the pepper again. The notch should read as an opening in the outer wall of the pepper. Discuss how and why the opening could be read as a door or a window.
 - Print a few more sections with the opening and discuss ways you could graphically indicate if the opening were a door or a window.



- Review some basic section symbols:
 - Window - Symbol for glass window in a solid wall.
 - Door – Symbol for a door in a solid wall



- Draw these symbols separately, then as part of a pepper section.

Reinforcement Exercise

Make a floor plan of your classroom

<http://www.teachervision.fen.com/measurement/lesson-plan/49.html>