Column Activity Guidelines

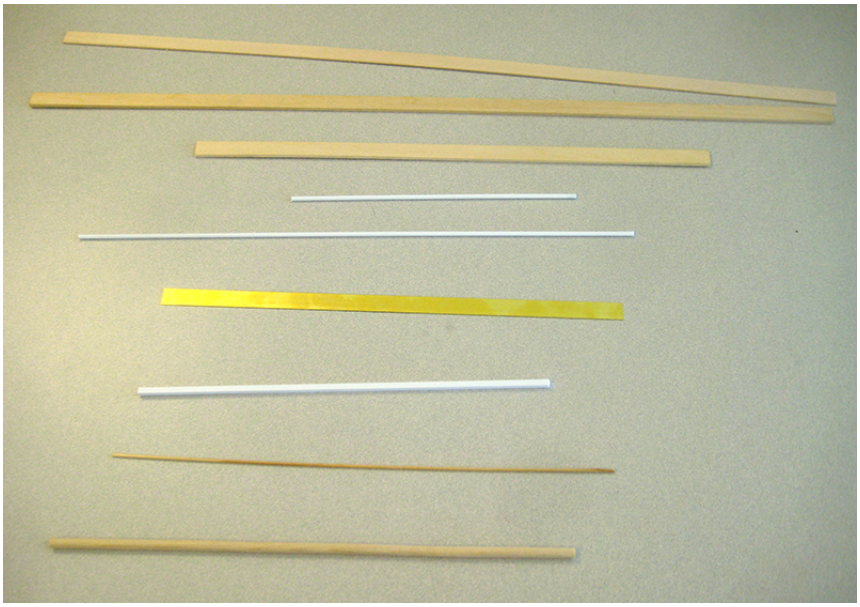
How do columns fail? What factors affect the amount of load that may be carried by a column? Experiment with different 'columns' to get a feel for how they behave. You don't need to record any numbers.

Design Goal: Using only paper and tape create a set of columns to support a book (or multiple books) as high as possible off the table or floor. Try to minimize the total amount of paper used.

Supplies:

- Paper
- Tape
- 'Columns' to test: uncooked spaghetti, wooden dowels, ruler, twigs, etc.

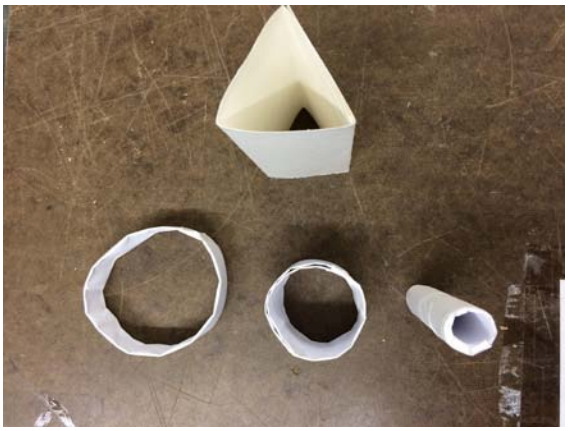
Question: Spend some time testing different 'columns.' The goal is to understand how columns fail and what factors affect the response of a column. How does height affect the amount of load a column can support? How about the shape of the cross-section? Or the material type? Or the size of the cross-section? Here are some ideas for 'columns' that you can test: uncooked spaghetti, twigs, a ruler, a wooden dowel, be creative. Try to find columns of different heights, shapes, materials, and sizes.



Brainstorm: Use what you learned in the questioning phase to design a set of columns to support a heavy load. What size columns will you use? How many columns will you use? What shapes will you use for the columns? How tall will you make the columns? Sketch lots of different ideas.

Select Alternatives: Select alternatives that meet your design goal of minimizing material while supporting a heavy load as high off a surface as possible.

Design and Prototype: Build several sets of columns. Be sure to test the columns as you build them to see if they can support a heavy load.



Test and Reflect: See how many books (or other heavy objects) you can place on your set of columns – weigh the objects if you wish. How much weight can they carry? How much paper did you use? How tall are your columns? How could you improve your design?