

Cool Activities

Test Your Design Skills!

This activity will simulate the design aspects of a Structural Engineer. Test your skill to see if you can design and construct a cost effective structure that meets the specified criteria, on time and within budget.

Objective:

Construct a paper structure that will support a standard hard cover textbook at least 12 (twelve) inches above a flat sturdy surface for a minimum of 30 seconds.

The configuration of the structure is up to your imagination; square, tri-pod, circular...it's your choice. You might want to involve some of your friends...see who can come up with the best design.



Rules:

- The structure will be made entirely of paper and masking tape. "Often, specific constraints limit the materials available to engineers"
- Paper used for construction shall be standard size typing or notebook paper (8.5 inches wide and 11 inches high). "Materials come in standard dimensions from the vendor,

engineers must adapt their design to make use of these materials.”

- You should complete your design and construction within 30 minutes. “Engineers have deadlines that must be met.”
- Each sheet of paper used during construction will cost \$1,000, and each 1/4 inch of tape will cost \$100. Construction materials are not free.
- The best design meets the specified objective at the lowest cost.
- There will be a cost for all materials used or damaged in construction, even discarded materials.
- The structures cannot be load tested before it is declared “complete”.

The book may be weighed and measured any time during the construction of the structure. Engineers investigate the maximum loads that the structure must support.

Materials:

- 10 (ten) sheets of typing paper (8 1/2 x 11)
- 10 inches of 1/2 inch wide masking tape
- 12 inch ruler
- scissors

Procedure:

- Gather information, determine performance requirements of structure

- Assemble materials
- Start timer
- Brainstorm design concepts
- Construct structure
- Load test the structure
 1. Place structure on sturdy level surface
 2. Gently place textbook on paper structure
 3. Start timer (book must be supported for at least 30 seconds)
 4. Measure to insure that the book is supported at least 12 inches off the flat surface

GOOD LUCK!