

You are encouraged to work in groups of two to four on this assignment and make a single group submission. Each problem is worth 3 points for correct and clearly justified answers.

1. [B&C] Squares with sides of length x are cut out of each corner of a rectangular piece of cardboard measuring 3 ft by 4 ft. The resulting piece of cardboard is then folded into a box without a lid. Find the volume of the largest box that can be formed in this way.
2. [B&C] Suppose that the original piece of cardboard in #1 is a square with sides of length ℓ . Find the largest box that can be formed in this way.
3. [B&C] A load is to be suspended 6 m below a high ceiling using cables attached to two supports that are 2 m apart. How far below the ceiling should the cables be joined to minimize the length of cable used?
4. [B&C] What is the length of the longest pole that can be carried horizontally around a corner at which a 3-ft corridor and 4-ft corridor meet at a right angle?
5. [B&C] What is the length of the longest pole that can be carried horizontally around a corner where corridors of width a ft and b ft meet at a right angle?

