Michigan Math Club

Thursday at 4pm in the Commons

Free Pizza and Pop

Counting cells in n-dimensional buildings

Hyman Bass

Abstract for 14 October 2010

Consider a rectangular "building," which is an a x b x c rectangle, having a•b•c cubical "rooms," and (a+1)•(b+1)•(c+1) vertices ("corners"). What about the number of faces ("walls, floors, & ceilings"), or the number of edges? There are various ways to count these. I will illustrate one using simple ideas of linearity and symmetry. Some patterns appear that suggest generalizations, but these require going to dimensions > 3.