

1096-VN-1139 **Derege H Mussa*** (/derege.mussa@tamuc.edu/dhm2114@columbia.edu), Department of Mathematics, Texas A&M University-Commerce, Commerce, TX 75429. *Reconstruction of Tetrahedron from Edge length*. Preliminary report.

Abstract If one has three sticks (length), when you make a triangle with the sticks? As long as any two of the lengths sum to a value strictly larger than the third length one can make a triangle. A tetrahedron (plural tetrahedra) is a three dimensional solid having four vertices, four triangular faces and six edges which don't lie in a single plane. Perhaps surprisingly , if one is given 6 sticks (length) there is no simple way of telling if one can build a tetrahedron with the sticks .In fact, even though one can make a triangle with any triple of three lengths selected from the six, one still may not be able to build a tetrahedron. At the other extreme, if one can make a tetrahedron with the six lengths, there are at most 30 different (incongruent) tetrahedra with the six distinct edge lengths and each tetrahedron is congruent with 24 tetrahedra corresponding to the 24 ways of labeling the four vertices for a total of 720 tetrahedra . The paper discuss new mathematical questions: 1. How to reconstruct incongruent tetrahedra from the six edge lengths 2. What is the maximum number of incongruent tetrahedron with six edge lengths can be formed (Received September 13, 2013)