Minnesota Universities & Colleges Entrance Mathematics Competency
Subject Matter: Geometry
For all college entering students who plan to major in a math-related field
March 17, 2003

Topics: Distances, areas, and volumes, and their relationship with dimension, angle measurement, similarity, congruence, lines, triangles, circles and their properties, symmetry, Pythagorean Theorem, coordinate geometry in the plane, including distance between points, midpoint, equation of a circle, introduction to coordinate geometry in three dimensions, right angle trigonometry. Increased emphasis should be placed on developing an understanding of geometric concepts sufficient to solve unfamiliar problems and an understanding of the need for compelling geometric arguments, while decreased emphasis should be placed on memorization of terminology and formulas.

Two- and three-dimensional coordinate geometry, locus problems, vectors and parametric representation of curves.

A few sample problems

1. A model train travels around a circular track once in 60 seconds. The diameter of the circular track is 10 feet. (Give all answers to the nearest hundredth of a foot.)

   (a) What is the speed of the train in feet per seconds?

   (b) The train travels for 15 seconds. How far did it travel? What is the straight-line distance between its original position and its final position?

   (c) The train travels for 112 seconds. How far did it travel? What is the straight-line distance between its original position and its final position?

2. A box is twice as high as it is wide and three times as long as it is wide. It just fits into a sphere of radius 3 feet. What is the width of the box?