



PROBLEM OF THE WEEK #9
(Fall 2019)

The points (x, y, z, w) in four-dimensional space such that $-1 \leq x, y, z, w \leq 1$ form a *hypercube* H . A two-dimensional projection of H is shown below.

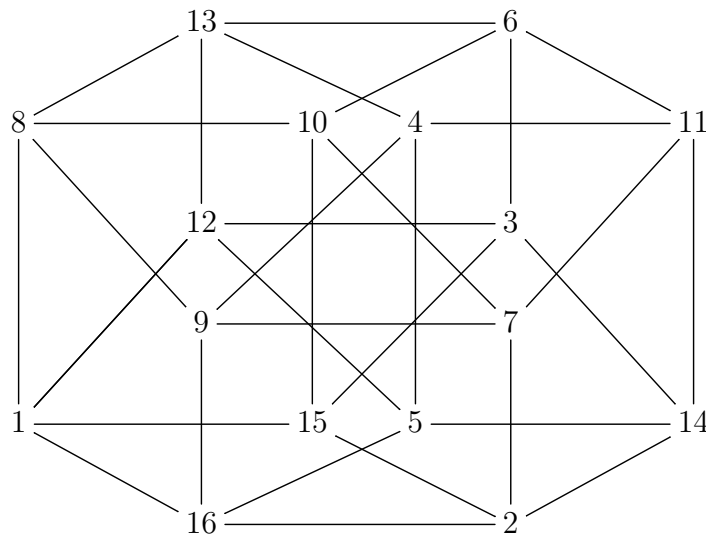
The points in H with $x = 1$ comprise a *facet* of H . H has a total of eight facets; each is made up of the points in H with a certain coordinate equal either to -1 or to 1 . Each facet of H is a cube with eight vertices.

Arrange the integers $1, 2, 3, \dots, 16$ at the vertices of H so that:

- each integer is used exactly once, and
- the integers at the vertices of each facet sum to 68.

Solution:

Many solutions are possible; here is one.



Source: “Cube Addition.” *More Puzzlegams: A colorful, beguiling collection of 148 classic puzzles designed by Pentagram*. New York: Fireside (1994), 27.