MaxDistSol

Four people could get as far away from each other if they were at the vertices of an inscribed regular tetrahedron, a 4-sided figure with equilateral triangles for each face (See Figure 1 for a flattened one; go ahead, cut it out and fold it up) with edges of 6,467± miles.

Six people would be separated as far as possible if they were at the vertices of an inscribed regular octahedron, an 8-sided figure with equilateral triangles for each face (See Figure 2 for a flattened one).

Seven could be separated by four equilateral spherical triangles of 80°.

Eight can be separated if at the vertices of an inscribed square antiprism, a flat version of which is shown in Figure 3.

Nine could be separated by eight equilateral spherical triangles with angles of $\cos^{-1}\left(\frac{1}{4}\right)$.

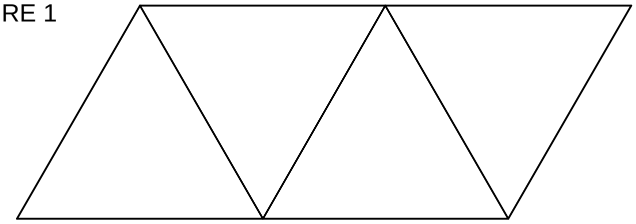
Twelve could be separated by being at the vertices of an inscribed regular icosahedron, a twenty-sided figure with equilateral triangles for faces, a flat version of which is shown in Figure 4.

The chord distance for all of the above can be calculated from Fejes Tóth's formula:

$$\text{chord distance} \leq \sqrt{4 - \csc^2\left[\frac{n \cdot \pi}{6(n-2)}\right]}$$, where n = number of vertices

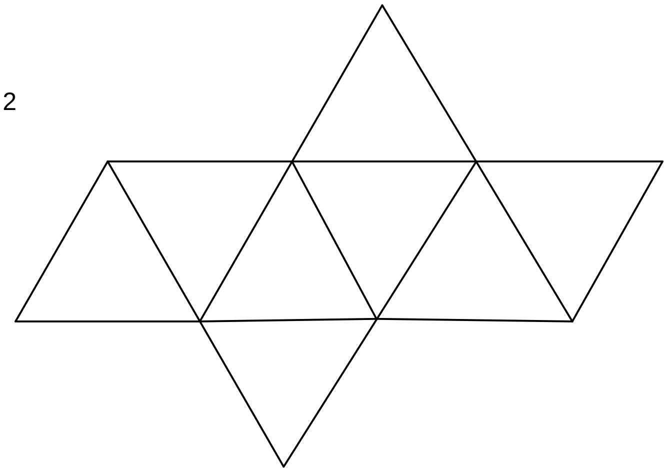
(There is no solution for n=1. Wherever you go, there you are.)

FIGURE 1



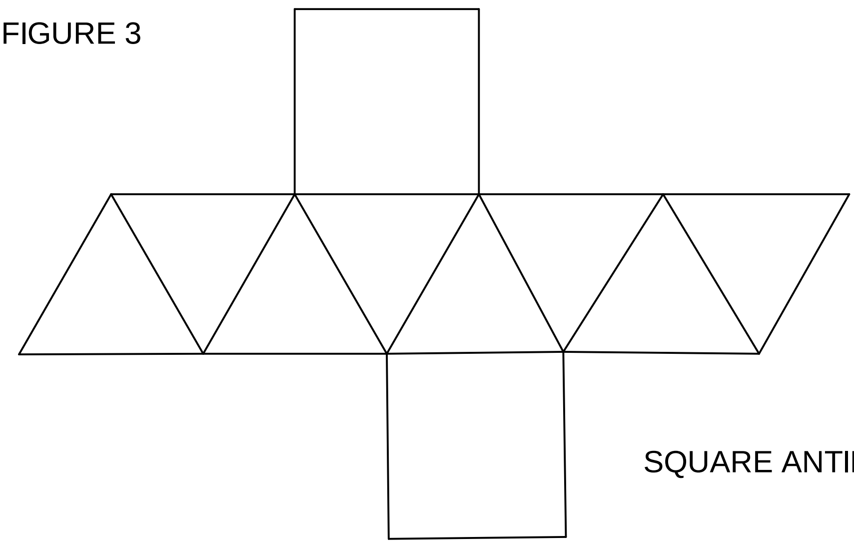
TETRAHEDRON

FIGURE 2



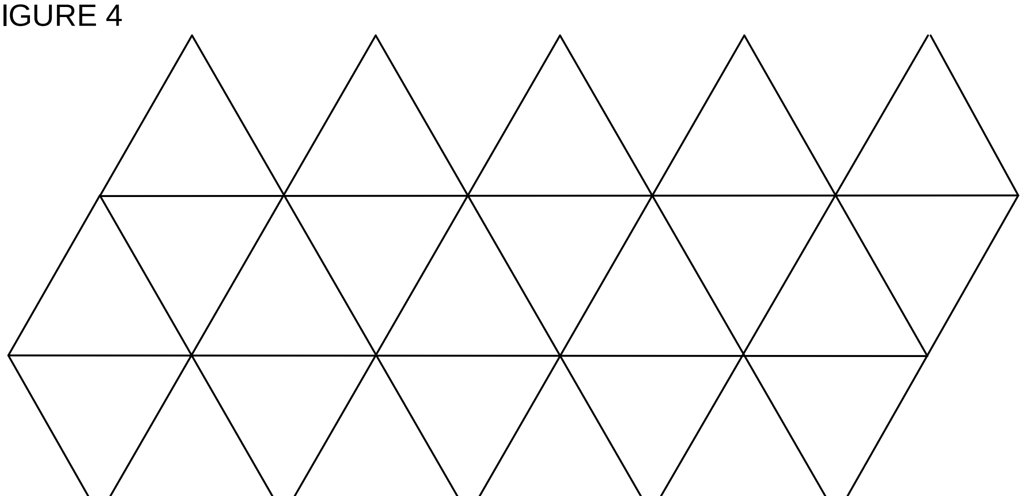
OCTAHEDRON

FIGURE 3



SQUARE ANTIPRISM

FIGURE 4



ICOSAHEDRON