Polyhedra Problem

Part 1:

Farmer Joe wants to plant three orange trees in such a way that the distance between each pair of trees is equal. Can he do it? If you think he can, draw a picture showing how. If you think he can't, explain why not.

Part 2:

Farmer Joe wants to plant four orange trees in such a way that the distance between each pair of trees is equal. Can he do it? If you think he can, draw a picture showing how. If you think he can't, explain why not.

Part 3:

Farmer Joe wants to plant five orange trees in such a way that the distance between each pair of trees is equal. Can he do it? If you think he can, draw a picture showing how. If you think he can't, explain why not.
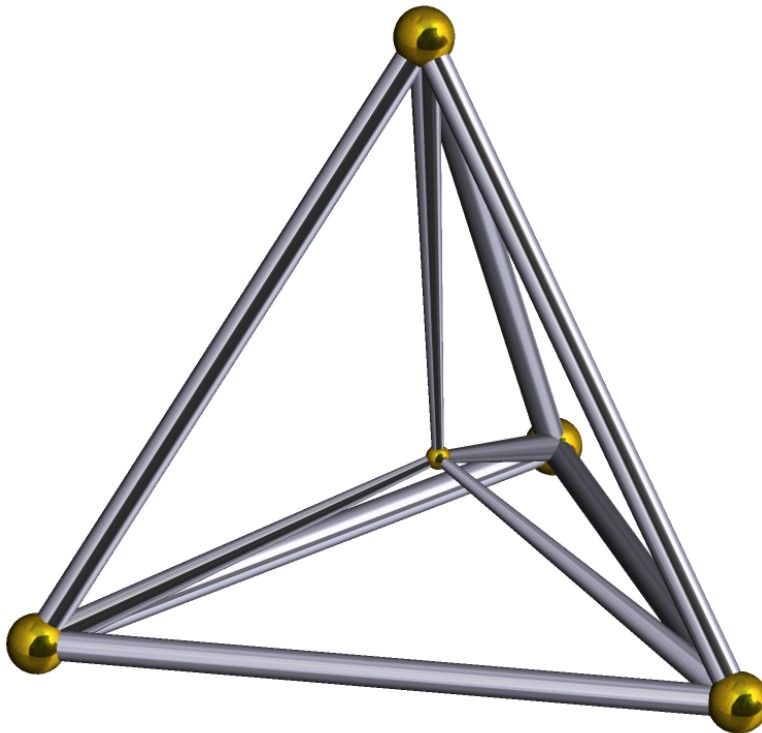
Part 1: A solution is to plant the trees at the vertices of an equilateral triangle.

Part 2: A solution is to use a hill to plant the trees at the vertices of an equilateral tetrahedron.

Part 3: Not in 3D. A 4D tetrahedron is called a pentachoron because it has five 3D faces, each in the shape of a 3D tetrahedron.

Pretty cool gif of a pentachoron: **https://en.wikipedia.org/wiki/5-cell#/media/File:5-cell.gif**

More info: https://en.wikipedia.org/wiki/5-cell