Hierarchical Clustering and k-means Worksheet

1. Here are some of the grades on the first midterm. Cluster the grades using the k-means algorithm (k = 3). Use the following initial clusters (95, 85, 75).

86, 90, 72, 100, 62, 75, 99, 85, 70, 80, 89, 82, 95, 92, 95, 66, 71, 71, 96, 88, 70, 85

**Answer:**
The resulting centroids are 96.17, 85.63, and 69.63

The clusters are:
100, 99, 95, 92, 95, 96
86, 90, 85, 80, 89, 82, 88, 85
72, 62, 75, 70, 66, 71, 71, 70
2. Using the grades from the previous problem, create a hierarchical cluster tree (dendrogram). Use the average linkage distance (also known as unweighted average distance (UPGMA)). Show the calculations and the resulting dendrogram.

**Answer:**
