

Index	Temperature (F)
a	90
b	20
c	120
d	70
e	30
f	40
g	110
h	80

Q1) Using the above 1-dimensional dataset, you will be performing a k-means algorithm step by step. For this problem, $k = 3$, which means there will be 3 clusters of data.

a. What are the three clusters given the following centroids?

Centroid 1 = 10, Centroid 2 = 60, Centroid 3 = 170

- **Cluster 1:**
- **Cluster 2:**
- **Cluster 3:**

b. Update the clusters again based on the new centroids.

- **Cluster 1:**
- **Cluster 2:**
- **Cluster 3:**

Q2) Cluster the same data using hierarchical clustering (AGNES).

- **Cluster 1:**
- **Cluster 2:**
- **Cluster 3:**

Note: the order you break ties does not change the final outcome