4.)

(a) The fusion on the complete linkage dendogram will occur higher on the tree, b/c it will occur at the value on the vertical axis which is the maximum of the pairwise dissimilarities between the clusters {1,2,3} and {4,5}, rather than the minimum (which single linkage would do).

(b.) They will occur at the same height. This is b/c there is only 1 dissimilarity between {5} and {6}, thus the max and min dissimilarity will both be equal that 1 dissimilarity, and thus 2 fusions will occur at the same height.

5.) In Figure 10.14:

(i) Left Panel: I would expect 2 clusters, with the differences in cluster assignment being driven mostly by the number of socks purchased, and less by number of computers purchased. For instance, the 2 clusters might be:

cluster 1: {Black, Orange, Red, Pink} ⇒
cluster 2: {Blue, Teal, Green, Purple}

This is b/c # socks varies greatly, and # computers varies very little.

(ii) Center Panel: I would expect the 2 clusters obtained to be driven practically entirely by scaled number of computers purchased, namely:

Cluster 1: {Black, Orange, Blue, Teal}
Cluster 2: {Green, Purple, Red, Pink}

This is b/c scaled # computers varies much more than scaled # socks

(iii) Right Panel: I would expect the 2 clusters to be determined practically entirely by dollars spent purchasing computers; i.e.

cluster 1: {Black, Orange, Blue, Teal}
cluster 2: {Green, Purple, Red, Pink}

This is b/c $ computers purchased varies much, much more than $ socks purchased.