Deformation computation homework

Due September 12, 2013 at the beginning of class. Please write out your work as completely possible.

1) Measure the distance between the ends of the layer along the layer (lo) and as a straight line distance (lf).
Determine the magnitude of shortening (e) of this bed assuming that it was originally planar.
If a reasonable shortening rate is $-1 \times 10^{-7}$/yr, how long would it take to make these folds?
2) Measure the distance between the ends of the layer along the layer (lo) and as a straight line distance (lf). The dashed line helps to indicate the bed (you can choose how much of the fold to analyze).

Determine the magnitude of shortening (e) of this bed assuming that it was originally planar. If a reasonable shortening rate is $-1 \times 10^7$/yr, how long would it take to make these folds?
3) Measure the distance between the ends of the layer along the layer (lo) and as a straight line distance (lf). Note that it is both folded and faulted. Mark the path along which you measured the original length. Determine the magnitude of shortening (e) of this bed assuming that it was originally planar. If a reasonable shortening rate is $-1 \times 10^{-7}$/yr, how long would it take to make these folds?
Compute the east-west elongation rate \( e = (l_f - l_o)/l_o \) divided by time—one year in this case—across the Salt Lake valley. Don’t forget to account for the conversion of km to millimeters.

a. The original east-west length is 73.29 km.

b. P089 moves -0.79 mm/yr (negative means west)

c. P086 moves -2.95 mm/yr (negative means west)