AP Stats Confidence Interval Practice! _____is confident

1) According to the American Community Survey, a 95% confidence interval for the median household income in Statsland during 2009-2011 was $58,929 ± $218. Interpret the confidence interval and confidence level using the sentence frames below:

Confidence Interval

We are ____ confident that the interval from _____ to _____ captured the ____ median income for households in Statsland.

Confidence Level

If _____ random samples of the same size of Statsland households were selected, the resulting confidence intervals would _____ the _____ median income for households in Statsland for about ____ of those samples.

2) A large company is concerned that many employees are in poor physical condition, which can result in decreased productivity. The company provides a pedometer to 50 randomly-selected employees to use for one 24-hour period. After collecting the data, the company reports a 95% confidence interval for the true mean number of steps is 4547 steps to 8473 steps.
   a) Interpret the confidence interval
   b) What is the point estimate and margin of error?
   c) Is there convincing evidence that employees are meeting the 10,000 steps-per-day guidelines?

3) How much does the fat content of Brand X hot dogs vary? To find out, researchers measured the fat content (in grams) of a random sample of 10 Brand X hot dogs. A 95% confidence interval for the population standard deviation is 2.84 to 7.55.

a) Interpret the confidence interval
b) Interpret the confidence level
c) True or false. The interval from 2.84 to 7.55 has a 95% chance of containing the actual population standard deviation. Justify your answer.

4) As part of a project about response bias, a group from Mr. B's stats class surveyed a random sample of 25 students from Gunn. One of the questions in the survey required students to state their GPA. Based on the responses, the group is 90% confident that the interval from 3.14 to 3.52 captured the mean GPA for all students.

a) Interpret the confidence level
b) What would happen to the length of the interval if the confidence level were increased to 99%.
c) How would a 90% confidence interval based on a sample size of 200 compare to the original 90% interval?
d) Describe a potential source of bias in the survey that's not accounted for in the margin of error.