1. **Did the employee do the correct analysis? If so, was his conclusion correct? If not, what should have been done?**

Yes, I think what he has calculated is correct. But the conclusion is not so accurate. Based on the result we can only be 99% confident that the true population mean locate within the interval. But we have no idea whether the whole population are all qualified. I would suggest he do randomly sampling and count the unqualified products, then using ration estimate to estimate the unqualified rate.

1. **Do the methods depend on any assumptions?**

The Central Limit Theorem underpins the formula for the CI, so the assumptions are Random, Normal, and Independent. **Random:** The data needs to come from a random sample or randomized experiment.**Normal:** The sampling distribution of diameters needs to be approximately normal. **Independent:** Individual observations need to be independent. If sampling without replacement, our sample size shouldn't be more than 10 percent of the population.

1. **Are the assumptions are made?**

We have to detect their sampling progress to answer this question.

1. **What questions would you ask about the sample of 40 fibers?**

How were they chosen? Are they chosen at random? What is the sampling framework? How big is the population?

1. **Is a sample of size 40 big enough?**

* Depends on the clients’ demands of the result(power, alpha) and the sampling cost.
* Also depends on the population variance. If the marginal increase of the information is too small, then we do not need so many samples.

1. **What general class of methods is used to** **make inference about proportions of a distribution from a sample?**

Significance Test; Confidence Interval.

1. **How do you explain things to the client who has at best a very superficial understanding of statistics?**

This is a interval that we are 99% confident will contain the true unknown value of population mean, which means the true population mean of the fibers locates somewhere between 0.0977 and 0.1063. (If we take a lot of samples of size 40, and create 99% CIs from them, we would expect most of them, 99% of them, contain the true population mean.)