Section 10/28

1 Question 9.6

"One pound" bags of coffee produced by a local company actually contain a random amount of coffee. The amounts of coffee in the bags are i.i.d. with unknown mean μ .

In 100 bags the average amount of coffee is 16.3 ounces and the SD is 0.7 ounces. For comparison, an ounce is approximately the weight of five quarters.

Construct an approximate 95% confidence interval for the underlying mean μ . Do the data indicate that $\mu = 16$ ounces?

2 Question 9.7

A survey organization studying households in a county takes a simple random sample of 500 households from all the households in the county.

The size of a household is the number of people who live in it. The sizes of the sampled households have an average of 2.8 and an SD of 2.1.

Ten percent of the sampled households consist of just one person. Such households are called "single person" households.

a) If possible, construct an approximate 90% confidence interval for the average household size in the county. If this is not possible, explain why.

b) True or false: About 68% of the households in the sample had between 0.7 and 4.9 people.

c) If possible, construct an approximate 90% confidence interval for the percent of single person households in the county. If this is not possible, explain why not.

3 Question 9.12

A survey organization takes a simple random sample of 400 adults in a city. The annual incomes of the sampled people have an average of 68,000 dollars and an SD of 40,000 dollars.

a) Fill in the blank with one of the words "sample" or "city".

The interval "68,000 dollars ± 4,000 dollars" is an approximate 95% confidence interval for the average annual income of adults in the _____.

b) Pick all of the correct options and justify your choices. More than one option may be correct.

The normal curve used in the construction of the confidence interval in Part a is the distribution of:

- the incomes of the adults in the city
- the incomes of the adults in the sample
- the averages of all possible simple random samples of 400 adults from the city
- probabilities for how the average of a simple random sample of 400 adults from the city could come out

c) True or false (explain):

The incomes of approximately 95% of the adults in the city are in the range 68,000 dollars ± 4,000 dollars.

d) Fill in the blanks with the best choices you can make from the following set. You are welcome to use the same entry more than once.

- the average income of adults in the city
- the average income of adults in the sample
- 68,000 dollars
- 40,000 dollars
- 2,000 dollars

If you draw one adult at random from the city, that person's income has expectation equal to _____ and SD approximately equal to _____.

e) Fill in the blanks with the best choices you can make from the same set as in the previous part. Again you are welcome to use the same entry more than once.

If you draw a simple random sample of 400 adults from the city, the average income of the sampled adults has expectation equal to _____ and SD approximately equal to _____.