QMS202 Review Questions

The annual salary of the salespersons for the "inside" and "outside" sales positions is shown in the Table 1. The sample data consists of 36 observations, i.e., 20 "inside" salespersons and 16 "outside" salespersons.

An **outside** salesperson is responsible for bringing in sales for a company. He or she works outside the office and had to travel to meet potential customers.

An **inside** salesperson is responsible for selling using the phone or the web (online) without having to travel or see the potential customers face-to-face.

TABLE 1: ANNUAL SALARY OF INSIDE AND OUTSIDE SALESPERSON

Observation	Salary ($)	Type of Position
20	**59253**	**Inside**
23	**60949**	**Inside**
28	**64562**	**Inside**
29	**52644**	**Inside**
33	**56339**	**Inside**
6	**57718**	**Inside**
8	**48621**	**Inside**
12	**55632**	**Inside**
15	**51948**	**Inside**
21	**53464**	**Inside**
24	**52833**	**Inside**
30	**55959**	**Inside**
35	**63799**	**Inside**
1	**53938**	**Inside**
2	**52694**	**Inside**
4	**52031**	**Inside**
10	**54768**	**Inside**
11	**52282**	**Inside**
14	**51827**	**Inside**
16	**56588**	**Inside**
7	79081	Outside
9	72835	Outside
25	72914	Outside
36	78074	Outside
3	70515	Outside
5	62283	Outside
13	63856	Outside
17	68858	Outside
18	63478	Outside
27	64288	Outside
34	71345	Outside
19	83846	Outside
22	83176	Outside
26	83040	Outside
31	88730	Outside
32	77683	Outside

QUESTIONS:

1. Construct a 93% confidence interval estimate of the mean salary of all salesperson, regardless of the type of position.

_____≤ _____≤ _____

2. Construct a 92% confidence interval of the mean salary of all **inside** salespersons.

_____≤ _____≤ _____

3. Develop a 90% confidence interval of the mean salary of all **outside** salespersons.

_____≤ _____≤ _____

4. Determine the sample size needed to estimate the average salary of all salespersons (regardless of positions) to within ± $65 with 93% confidence. A pilot study indicates the population standard deviation can be estimated at $670.

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5. Determine the sample size needed to estimate the population proportion of salespersons (regardless of positions) to within 4% with 90.5% confidence. The population proportion was estimated to be in between 0.25 and 0.35.

_____

6. Do the sample data suggest that the average salary of all salespersons (regardless of the type of position) exceed $60,000? Use a 0.10 level of significance.

i) Ho: _____

Ha: _____

ii) Critical Value _____

iii) Draw the diagram to indicate the rejection region(s).

iv) What is the statistical decision? _____

v) What is the managerial conclusion?

7. Suppose the population standard deviation is $10,000, is there evidence that the average salary of all salespersons (regardless of the type of position) exceed $60,000? Use a 0.05 level of significance.

i) Ho: _____

Ha: _____

ii) Critical Value _____

iii) Draw the diagram to indicate the rejection region(s).

iv) What is the statistical decision? _____

v) What is the managerial conclusion?

8. Is there evidence that the proportion of all salespersons earning less than $60,000 (regardless of the type of position) is less than half? Use a 0.03 level of significance.

i) Ho: _____

Ha: _____

ii) Critical Value _____

iii) Draw the diagram to indicate the rejection region(s).

iv) What is the statistical decision? _____

v) What is the managerial conclusion?

9. Is there evidence that the percentage of outside salespersons ***earning less than $70,000*** is less than 60%? Use a 0.05 level of significance.

i) Ho: _____

Ha: _____

ii) Critical Value _____

iii) Draw the diagram to indicate the rejection region(s).

iv) What is the statistical decision? _____

v) What is the managerial conclusion?