Q1. A local law enforcement agency claimed that fewer than 50% of store owners actually turn shoplifters over to police. A random sample of 40 store owners indicated that only 24 of them turn shoplifters over to police.

Q2. A courier service advertises that its average delivery time is less than 6 hours for local deliveries. A random sample of times for 12 deliveries to an address across town was recorded. These data are show that sample mean is 5.6875 and the standard deviation is 1.5804. Is this sufficient evidence to support the courier's advertisement, at the 5% level of significance?

Q3. A men's softball league is experimenting with a yellow baseball that is easier to see during night games. One way to judge the effectiveness is to count the number of errors. In a preliminary experiment, the yellow baseball was used in 10 games and the traditional white baseball was used in another 10 games. The number of errors in each game was recorded. The sample statistics of these errors are given below. Can we infer that there are fewer errors on average when the yellow ball is used? (Assume the population standard deviations are equal to each other).

Yellow Ball:
mean = 5.1 ; standard deviation = 2.42
White Ball:
mean = 7.3 ; standard deviation = 2.41

Q4. The manager of a department store is thinking about establishing a new billing system for the store's credit customers. After a thorough financial analysis, she determines that the new system will be cost-effective only if the mean monthly account is more than $170. A random sample of 400 monthly accounts is drawn, for which the sample mean is $178. The manager knows that the accounts are approximately normally distributed with a standard deviation of $65. Can the manager conclude at 5% significance that with the new billing system the mean monthly account be greater than $170?

Q5. In an effort to determine whether a new type of fertilizer is more effective than the type currently in use, researchers took 12 two-acre plots of land scattered throughout the county. Each plot was divided into two equal-size subplots, one of which was treated with the current fertilizer and the other of which was treated with the new fertilizer. Wheat was planted, and the crop yields were measured.

Plot	1	2	3	4	5	6	7	8	9	10	11	12
Current fertilizer	56	45	68	72	61	69	57	55	60	72	75	66
New fertilizer	60	49	66	73	59	67	61	60	58	75	72	68

(a) Can we conclude at the 5% significance level that the new fertilizer is more effective than the current one?
(b) Estimate with 95% confidence the difference in mean crop yields between the two fertilizers.

Q6. One hundred normal-weight people and 100 obese people were observed at several Chinese-food buffets. For each, researchers recorded whether the diner used chopsticks or knife and fork. The table shown here was created.

	Normal Weight	Obese
Used chop sticks	26	7
Used knife and fork	74	93

Is there sufficient evidence at the 10% significance level to conclude that obese Chinese food eaters are less likely to use chop sticks?