BUSAD 265 Name: _____
Exam 4 - Practice
11 Nov 2026

For Problems 1–8, conduct a hypothesis test using the Z distribution and $\alpha = 0.05$.
For Problems 9–10, construct a 95% confidence interval and interpret your result.

Part I. Significance Testing

1. A logistics firm advertises an average delivery time of 50 minutes. Historical data indicate the population standard deviation is $\sigma = 6$ minutes. A quality analyst takes a random sample of $n = 36$ deliveries and finds a sample mean of 52.8 minutes. Conduct a hypothesis test to determine whether the average delivery time differs from the advertised 50 minutes.

2. A university reports that 60% of its undergraduate students work at least part-time. A professor believes the actual percentage is lower. In a random sample of 200 students, 108 report having jobs. Conduct a hypothesis test to evaluate the professor's claim.

3. A restaurant manager claims that the average customer spends $25 per visit. A random sample of 100 customers has an average expenditure of $27.40. The population standard deviation is $\sigma = \$10$. Conduct a hypothesis test to determine whether the average expenditure exceeds $25.

4. A marketing researcher believes that 30% of adults plan to purchase an electric vehicle within the next five years. In a random sample of 400 adults, 136 say they plan to purchase an EV. Conduct a hypothesis test to determine whether the proportion differs from 30%.

5. A regional grocery chain claims that customers spend an average of $57 per visit. A store manager believes that the actual average is lower. A random sample of 100 transactions shows an average purchase of $55. Assume the population standard deviation is $\sigma = \$8$. Conduct a hypothesis test to determine whether the average purchase is less than $57.

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6. A coffee shop owner believes that the average customer spends more than $25 per visit. Historically, average spending has been $25. A random sample of 40 customers shows an average expenditure of $26. Assume the population standard deviation is σ = $3. Conduct a hypothesis test to determine whether average customer spending has increased.

7. A university reports that students spend an average of 72 minutes per day studying outside class. A professor suspects that the actual average differs from this figure. A random sample of 64 students reports an average of 74.1 minutes per day. Assume the population standard deviation is σ = 5.2 minutes. Conduct a hypothesis test to determine whether the average study time differs from 72 minutes.

8. A political analyst believes that more than half of Colorado voters support a proposed ballot measure. In a random sample of 400 registered voters, 220 indicate support. Conduct a hypothesis test to determine whether a majority of voters support the measure.

Part II. Estimation with Confidence Intervals

9. According to a survey of 81 fast-food establishments in Denver, the average cost of a fast-food meal (cheeseburger, french fries, and medium soft drink) is $9.62. Assume the population standard deviation is σ = $1.80. Construct a 95% confidence interval to estimate the average price of a fast-food meal in Denver.

10. A marketing researcher surveys n = 200 adults to determine whether they plan to buy an electric vehicle within the next five years. Of the 200 respondents, 58 say yes. Construct a 95% confidence interval to estimate the true proportion of adults who plan to buy an electric vehicle within five years.