

Unit 8: Statistical Inferences

PRACTICE · SET 2

Name: _____ Date: _____

Show your work and give each answer as an exact value. Use $z = 1.645$ for 90%, $z = 1.96$ for 95%, and $z = 2.576$ for 99% confidence.

1. A normal distribution has mean 70 and standard deviation 6. What is the z-score for a value of 82?

Answer: _____

3. A normal distribution has mean 40 and standard deviation 5. Using the 68-95-99.7 rule, what percent of values lie between 30 and 50? Give your answer as a percent.

Answer: _____

5. In a sample of 200 voters, 120 support a measure. What is the sample proportion $\hat{p}$? Give your answer as a decimal.

Answer: _____

7. A poll reports a sample proportion of 0.45 with a margin of error of 0.04. What is the upper bound of the confidence interval? Give your answer as a decimal.

Answer: _____

9. A 95% confidence interval for a proportion runs from 0.32 to 0.44. What is the margin of error? Give your answer as a decimal.

Answer: _____

2. Test scores are normally distributed with mean 500 and standard deviation 100. A student's z-score is -1.5. What was the student's actual score?

Answer: _____

4. Heights are normally distributed with mean 160 cm and standard deviation 8 cm. Using the 68-95-99.7 rule, what percent of heights are greater than 168 cm? Give your answer as a percent.

Answer: _____

6. A survey of 400 people has a sample proportion of 0.5. The margin of error for a 95% confidence interval is $z \times \sqrt{p(1-p)/n}$ with $z = 1.96$. Compute the margin of error, rounded to 3 decimal places.

Answer: _____

8. A 95% confidence interval for a proportion runs from 0.32 to 0.44. What is the sample proportion (the center of the interval)? Give your answer as a decimal.

Answer: _____

10. For a sample proportion $\hat{p} = 0.25$ with sample size $n = 100$, compute the standard error $\sqrt{p(1-p)/n}$, rounded to 4 decimal places.

Answer: _____

11. In an experiment, the treatment group mean was 78 and the control group mean was 71. What is the treatment effect (treatment mean minus control mean)?

Answer: _____