

Lesson 46: Confidence Intervals with the standard deviation known

III. Inferential Statistics

On the AP Formula
Page:

Standardized test statistic: $\frac{\text{statistic} - \text{parameter}}{\text{standard deviation of statistic}}$

Confidence interval: $\text{statistic} \pm (\text{critical value}) \cdot (\text{standard deviation of statistic})$

Daily Data Collection 1

Find a 95% confidence interval for the true mean value of
"The grade you were in when you first saw an R rated film"

Parts of the formula: $\bar{x} = \underline{\hspace{2cm}}$ $z = \underline{\hspace{2cm}}$ $n = \underline{\hspace{2cm}}$
 σ is known to be 1.7 grades

Old Thinking

1. A person is selected at random. What is the probability that they were 5th grade or younger when this occurred?
2. What grade places a person in the youngest 25% of students to view an R rated film?

New Thinking

3. Describe the distribution of \bar{x}
4. If \bar{x} is the true mean, then what is the probability of obtaining a sample mean 1 grade or more higher?
5. Describe the margin of error
6. Find the lower and upper bounds for the confidence interval
7. Give the AP Statement

Daily Data Collection 2

Find a 90% confidence interval for the true mean value of
"The grade you were in when you had your first crush"

Parts of the formula: $\bar{x} =$ _____ $z =$ _____ $n =$ _____

σ is known to be 2.1 grades

1. A person is selected at random. What is the probability that they were 5th grade or older?
2. What grade places a person in the youngest 40% of students to have a crush?
3. Describe the distribution of \bar{x}
4. If \bar{x} is the true mean, then what is the probability of obtaining a sample mean 1 grade or more lower than \bar{x} ?
5. Find MOE = _____ Lower = _____ Upper = _____
6. Give the AP Statement

Daily Data Collection 3

Find a 99% confidence interval for the true mean value of
"The grade you were in when you were first offered a substance that was illegal for you to consume"

Parts of the formula: $\bar{x} =$ _____ $z =$ _____ $n =$ _____

σ is known to be 2.4 grades

1. A person is selected at random. What is the probability that they were 8th grade or younger?
2. What grade places a person in the youngest 10% of students to have a crush?
3. Describe the distribution of \bar{x}
4. If \bar{x} is the true mean, then what is the probability of obtaining a sample mean 1 grade or more lower than \bar{x} ?
5. Find MOE = _____ Lower = _____ Upper = _____
6. Give the AP Statement

HW 46 (Section 8-3): 59, 60, 64 (use S_x for st dev. in 60 and 64)