AP Statistics

Chapter 8: Estimating with Confidence

Day 2

HW: Lesson 2 Practice Worksheet

95% Confidence Intervals

Between -1.64 and -1.65
±1.645

$$\hat{p} \pm 1.96\sqrt{\frac{\hat{p}(1-\hat{p})}{n}}$$

How does this formula change if I want a 90% confidence level?

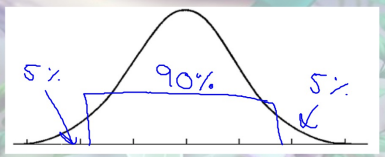


Table E The Standard Normal Distribution
Cumulative Standard Normal Distribution

Example

* check conditions

In 64% of an SRS of 550 people leaving a shopping mall claim to have spent over $25, determine a 99% confidence interval estimate for the proportion of shopping mall customers who spend over $25.

$CI = \hat{p} \pm z^* SE$

$SE_{\hat{p}} = \sqrt{\frac{\hat{p}(1-\hat{p})}{n}} = \sqrt{\frac{.64(.36)}{550}} = .0205$

$\hat{p} = .64$

$n = 550$

$CI = .64 \pm 2.576(.0205)$

$= (.5872, .6928)$

I am 99% confident that the true population proportion of shopping mall customers who spent over $25 falls between 58.72% and 69.28%

Example

Mrs. Smith's class took an SRS of 102 pennies and discovered that 57 of the pennies were more than 10 years old. Calculate and interpret a 99% confidence interval for the true proportion of pennies from the collection that are more than 10 years old.

$X = 57$

$n = 102$

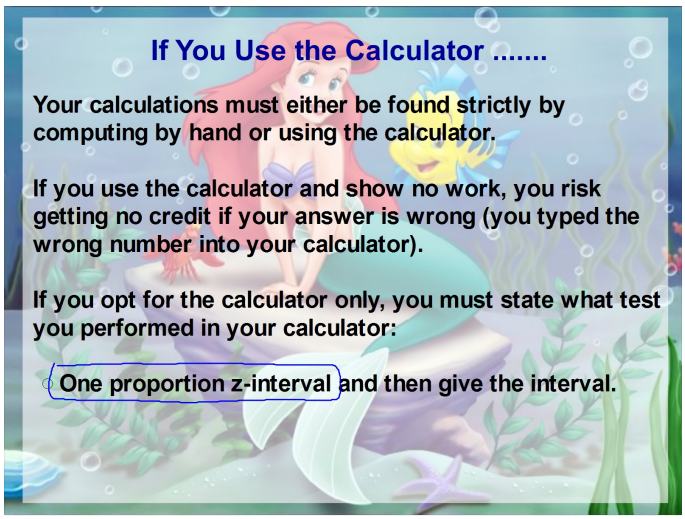
Con. Level = 99%

$\hat{p} = .5588$

Using calculator, I used the 1-proportion z interval test.

(.4321, .6855)

I am 99% confident that the true population proportion of pennies over 10 years old falls between 43.21% and 68.55%


If You Use the Calculator .....
Your calculations must either be found strictly by computing by hand or using the calculator.
If you use the calculator and show no work, you risk getting no credit if your answer is wrong (you typed the wrong number into your calculator).
If you opt for the calculator only, you must state what test you performed in your calculator:
One proportion z-interval and then give the interval.