AP Statistics

Chapter 9:
Testing a Claim: Significance Tests

Day 4

HW: Lesson Practice Worksheet

Perform the Test (p-value) for Proportions

- The p-value is the probability that our result would happen if the null hypothesis were true.
- The test can be performed by hand or by using the calculator.
- By hand: $$z = \frac{\hat{p} - p_o}{\sqrt{\frac{p_o(1-p_o)}{n}}}$$
- Calculator: 1-PropZTest

One Potato, Two Potato

$\hat{p} = \frac{47}{500} = .094$

A potato-chip producer of has just received a truckload of potatoes from its main supplier. If the producer determines that more than 8% of the potatoes in the shipment have blemishes, the truck will be sent away to get another load from the supplier. A supervisor selects a random sample of 500 potatoes from the truck. An inspection reveals that 47 of the potatoes have blemishes. Carry out a significance test at the $\alpha = 0.10$ significance level. What should the producer conclude?

H_0: $p = .08$ (The prop. of potatoes that have blemishes is 8%)

H_a: $p > .08$ (The prop. of potatoes that have blemishes is more than 8%)

1. As stated, this is an SRS.
2. $500 \leq \frac{1}{10}N \rightarrow 5000$ we can assume that they get at least 5000 potatoes.
3. $500(.094) \geq 10 \rightarrow 47 \geq 10$ There are at least 10 successes and failures.
   $500(.906) \geq 10 \rightarrow 453 \geq 10$

One Potato, Two Potato

A potato-chip producer of has just received a truckload of potatoes from its main supplier. If the producer determines that more than 8% of the potatoes in the shipment have blemishes, the truck will be sent away to get another load from the supplier. A supervisor selects a random sample of 500 potatoes from the truck. An inspection reveals that 47 of the potatoes have blemishes. Carry out a significance test at the $\alpha = 0.10$ significance level. What should the producer conclude?

$\hat{p} = .094$ $x = 47$ $n = 500$ $z = 1.154$

p-value: .124

Using my calculator. I performed a 1-proportion Z Test.

Since the p-value is .124 and is greater than the significance level of $\alpha = .10$, we fail to reject H_0. There is not sufficient evidence to conclude that the proportion of potatoes with blemishes is more than 8%.