

Name:

Statistics

Date:

Practice Quiz 7-B

1. Americans watch an average of 21 hours of TV per week. Assume this is normally distributed with $\sigma = 6.5$ hours. Seamus does a survey to see if the average is different for Scotts Valley residents.

a) What is his null hypothesis for a two-tailed test?

The null hypothesis states that there is no difference in the predicted direction(s).

b) In his random sample of 60 Scotts Valley residents, the average weekly viewing time is 18.8 hours. Calculate z .

Use the normal z formula for a mean.

c) Sketch z or $\pm z$ on the normal curve, and shade the area representing the p value.

The area representing the p value is the area further from the mean than z or $\pm z$.

d) Calculate the p value. Verify that it is about the same as the size of the shaded area.

Use the methods from chapter five to calculate the probability of a z score being in the shaded region.

e) Does he reject the null hypothesis?

Is the p value below .05?

f) What is his conclusion?

He either can or cannot make a claim about the population. If he makes a claim, the direction of the claim must be clearly stated and must match his alternate hypothesis..

g) Could he be making a type I error? If so, what would that mean? If not, why not?

Rejecting a true null is a type I error.

h) Could he be making a type II error? If so, what would that mean? If not, why not?

Failing to reject a false null is a type II error.

i) What would his p value and conclusion have been if he had done a right-tailed test instead of a two-tailed test?

His p value for a one-tailed test would have included area from only one critical value, so it would have been either much bigger or half as big.

2. Violet hypothesizes that the majority of people who use Android phones are men. In a random sample of 284 Android users, 127 are men.

a) Calculate p for her one-tailed test, and use it to make a conclusion.

Follow the steps above, but use the z formula for proportions instead of for means.

b) What would her p value and conclusion have been if she had done a two-tailed test instead of a one-tailed test?

Her p value for a one-tailed test would have included area from both tails, so it would have been either much smaller or twice as big.

