Name: **Statistics Classwork 8**

8-A Introduction to Hypothesis Testing

1. Bargh, Chen, and Burrows (1996) had participants do a puzzle involving unscrambling words. For half of the 60 participants, many of the words involved stereotypes of elderly, such as "bingo" and "Florida." The researchers predicted that the participants having these words would walk more slowly than the other participants when they left the lab.

a) What is their alternate hypothesis?

b) Are they doing a one-tailed or two-tailed test?

c) What is their null hypothesis?

d) What would a type I error mean in this experiment?

e) What would a type II error mean in this experiment?

f) List three factors (specific to this context) that would contribute to them being able to claim that their alternate hypothesis was correct.

g) Based on their results, they concluded that their alternate hypothesis was correct. Therefore, their data were _____ _____ and they _____ the null hypothesis.

8-B *P* Values

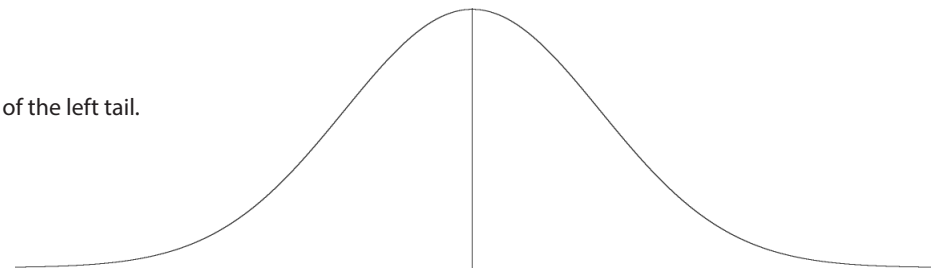
2. Jason is testing if a certain coin is weighted. He flips it 25 times and it lands on tails 16 of those times.

a) Explain why Jason will do a two-tailed test instead of a one-tailed test.

b) Calculate the *z* score for his data, plot *z* on the curve, and shade from *z* to the end of the right tail.

c) Plot -*z* on the curve and shade from -*z* to the end of the left tail.

d) Calculate the total shaded area.



e) What is Jason's *p* value?

f) Does Jason reject H_0? Why or why not?

g) What is Jason's conclusion about the coin?

8-C Critical Values

3. Find the critical values for the following tests.

a) a test of a mean, $n = 15$, left-tailed

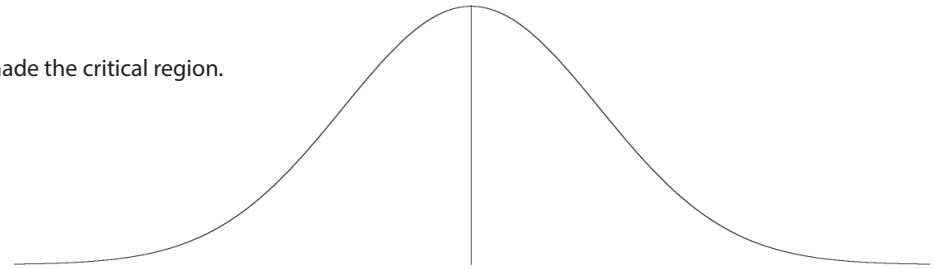
b) a test of a proportion, $n = 28$, two-tailed

4. Erik is testing to see if the average speed on Highway 880 is higher than the posted 65 mph. A sample of 10 cars yields a mean of 70.4 mph, with standard deviation 9.8 mph.

a) Explain why Erik will do a right-tailed test.

b) Find the critical value, plot it on the curve, and shade the critical region.

c) Calculate *t* and plot it on the curve.



d) Does Erik reject H_0? Why or why not?

e) What is the critical value for $\alpha = .01$?

f) Is *p* less than .01?

g) State Erik's conclusion, including the *t* score and a *p* value range.

8-D Within-Participants Designs

6. Nathan predicts that kids can react faster to a stimulus with their dominant hand than with their recessive hand. He gets times for five kids:

a) Explain why Nathan will do a left-tailed test.

dominant hand:	255	301	229	282	241
recessive hand:	266	281	270	289	280

b) What is Nathan's alternate hypothesis?

c) What is Nathan's null hypothesis?

d) Calculate the differences.

e) Calculate the mean and standard deviation of the differences.

f) Calculate *t*.

g) Does Nathan reject H_0?

g) State Nathan's conclusion, including the *t* score and a *p* value range.

8-E Between-Participants Designs.

7. Loftus & Palmer (1974) showed 100 participants a video of a car accident. Afterward they asked half the participants to estimate the speed of the cars when they "hit" each other and the other half to estimate the speed of the cars when they "smashed into" each other. The mean estimate was 8.00 mph for the "hit" group and 10.46 mph for the "smashed into" group. Assume the standard deviation was 6.0 for each sample.

a) Why did they choose to do this experiment with a between-participants design rather than a within-participants design?

b) Use the calculator to find *t* and *p*.

c) State their conclusion, including the *t* score and the *p* value.

8. A week later they asked the same participants if there was any broken glass at the scene of the accident. Seven of the people in the "hit" group and 16 of the people in the "smashed into" group remembered broken glass (even though there actually was none).

a) Use the calculator to find *z* and *p*.

b) State their conclusion, including the *z* score and the *p* value.