9.3 Worksheet 1

Errors with Significant Tests

**★I can interpret a Type I error in context★**

**★I can interpret a Type II error in context★**

Consider the following null and alternative hypotheses. Describe a Type I Error and Type II Error in context.

1. H0: The choices on the fast food menu are not low in salt.

Ha: The choices on the fast food menu are high in salt.

Type I:

Type II:

1. H0: Teaching techniques have no significant effect on students’ exam scores.

Ha: Teaching techniques improve students’ exam scores.

Type I:

Type II:

Write a null and alternative hypothesis for each situation. Then describe a Type I Error and Type II Error that could occur. Make sure you answer IN CONTEXT.

1. According to an article in *Educational* Journal, 87% of high school students graduate. In a random sample of 250 high school students, it was discovered that 225 of them graduated. Is this significant evidence to prove that more than 87% of high school students graduate?

H0:

Ha:

Type I Error:

Type II Error:

1. The U.S. Coast Guard claims that 40% of small boats are in violation with one or more safety regulations. In a sample of 300 small boats in the Cape Cod area 115 were found to be in violation. Is this significant evidence to prove that less than 40% of small boats are in violation?

H0:

Ha:

Type I Error:

Type II Error:

1. Chelsea wants to rent a one-bedroom apartment for the upcoming fall semester. The college claims the monthly rent is $750 with a standard deviation is $80. She collects data on the monthly rent of 40 different apartments and finds the average to be $775. Is this significant evidence to prove that the cost of an apartment is more than $775 at the 0.04 significance level?

H0:

Ha:

Type I Error:

Type II Error:

1. Hospitals claim that the average stay after a hip replacement is 2 days with a standard deviation of 1 day. In a sample of 30 hip replacement patients, the average stay was 1.75 days. Is this significant evidence to prove that the average stay is less?

H0:

Ha:

Type I Error:

Type II Error:

1. 32% of people who try to lose weight are successful. In a sample of 100 people in a weight loss program, 40 were

successful in losing some extra pounds. Did the program increase the proportion of those successful in losing weight?

H0:

Ha:

Type I Error:

Type II Error: