

## 9.6.1: Hypothesis Testing of a Single Mean and Single Proportion (Worksheet)

Name: \_\_\_\_\_

Section: \_\_\_\_\_

Student ID#: \_\_\_\_\_

*Work in groups on these problems. You should try to answer the questions without referring to your textbook. If you get stuck, try asking another group for help.*

### 9.6.1.1 - Student Learning Outcomes

- The student will select the appropriate distributions to use in each case.
- The student will conduct hypothesis tests and interpret the results.

### 9.6.1.2 - Television Survey

In a recent survey, it was stated that Americans watch television on average four hours per day. Assume that  $\sigma = 2$ . Using your class as the sample, conduct a hypothesis test to determine if the average for students at your school is lower.

1.  $H_0$ : \_\_\_\_\_
2.  $H_a$ : \_\_\_\_\_
3. In words, define the random variable. \_\_\_\_\_ = \_\_\_\_\_
4. The distribution to use for the test is \_\_\_\_\_.
5. Determine the test statistic using your data.
6. Draw a graph and label it appropriately. Shade the actual level of significance.
  - a. Graph:



Figure 9.7.1.

- b. Determine the  $p$ -value.
7. Do you or do you not reject the null hypothesis? Why?
  8. Write a clear conclusion using a complete sentence.

### 9.6.1.3 - Language Survey

About 42.3% of Californians and 19.6% of all Americans over age five speak a language other than English at home. Using your class as the sample, conduct a hypothesis test to determine if the percent of the students at your school who speak a language other than English at home is different from 42.3%.

1.  $H_0$ : \_\_\_\_\_
2.  $H_a$ : \_\_\_\_\_
3. In words, define the random variable. \_\_\_\_\_ = \_\_\_\_\_
4. The distribution to use for the test is \_\_\_\_\_
5. Determine the test statistic using your data.

6. Draw a graph and label it appropriately. Shade the actual level of significance.
  - a. Graph:



Figure 9.7.2.

- b. Determine the  $p$ -value.
7. Do you or do you not reject the null hypothesis? Why?
8. Write a clear conclusion using a complete sentence.

#### 9.6.1.4 - Jeans Survey

Suppose that young adults own an average of three pairs of jeans. Survey eight people from your class to determine if the average is higher than three. Assume the population is normal.

1.  $H_0$ : \_\_\_\_\_
2.  $H_a$ : \_\_\_\_\_
3. In words, define the random variable. \_\_\_\_\_ = \_\_\_\_\_
4. The distribution to use for the test is \_\_\_\_\_.
5. Determine the test statistic using your data.
6. Draw a graph and label it appropriately. Shade the actual level of significance.
  - a. Graph:



Figure 9.7.3.

- b. Determine the  $p$ -value.
7. Do you or do you not reject the null hypothesis? Why?
8. Write a clear conclusion using a complete sentence.

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