

Table Number: _____

Group Name: _____

Group Members: _____

Practice Type I and Type II Errors

REMEMBER: A Type I error is REJECTING A TRUE NULL HYPOTHESIS

The LEVEL OF SIGNIFICANCE is the probability of making a Type I error

A Type II error is NOT REJECTING A FALSE NULL HYPOTHESIS

In each scenario, write a sentence that would illustrate the indicated error.

1. **Teenage Mothers.** According to the U.S. Census Bureau, 10.5% of registered births in the United States in 2007 were to teenage mothers. A sociologist believes that this percentage has increased since then.

Type I error:

Type II error:

2. **Charitable Contributions.** According to the Center on Philanthropy at Indiana University, the mean charitable contribution per household among households with income of \$1 million or more in the United States in 2005 was \$17,072. A researcher believes that the level of giving has changed since then.

Type I error:

Type II error:

3. **Single-Family Home Price.** According to the National Association of Home Builders, the mean price of an existing single-family home in 2009 was \$218,600. A real estate broker believes that because of the recent credit crunch, the mean price has decreased since then.

Type I error:

Type II error:

4. **Fair Packaging and Labeling.** Federal law requires that a jar of peanut butter that is labeled as containing 32 ounces must contain at least 32 ounces. A consumer advocate feels that a certain peanut butter manufacturer is shorting customers by under filling the jars.

Type I Error:

Type II Error:

5. **Valve Pressure.** The standard deviation in the pressure required to open a certain valve is known to be $\sigma = 0.7$ psi. Due to changes in the manufacturing process, the quality-control manager feels that the pressure variability has been reduced.

Type I Error:

Type II Error:

6. **Overweight.** According to the Centers for Disease Control and Prevention, 19.6% of children aged 6 to 11 years are overweight. A school nurse thinks that the percentage of 6- to 11-year-olds who are overweight is higher in her school district.

Type I Error:

Type II Error:

7. **Cell Phone Service.** According to the *CTIA- The Wireless Association*, the mean monthly cell phone bill was \$47.47 in 2010. A researcher suspects that the mean monthly cell phone bill is different today.

Type I Error:

Type II Error: