

Table Number: _____

Group Name: _____

Group Members: _____

Practice with the null and alternative hypotheses

REMEMBER: Hypothesis testing is a procedure, based on sample evidence and probability, used to test statements regarding a characteristic of one or more populations.

Complete:

The _____ is a statement of NO CHANGE, NO EFFECT, NO DIFFERENCE.

The _____ is a statement we are trying to find evidence to support.

In problems #1 – 6, the null and alternative hypotheses are given. Determine whether the hypothesis test is left-tailed, right-tailed, or two-tailed. What parameter is being tested?

1. $H_0 : \mu = 5$
 $H_a : \mu > 5$

2. $H_0 : p = 0.2$
 $H_a : p < 0.2$

3. $H_0 : \sigma = 4.2$
 $H_a : \sigma \neq 4.2$

4. $H_0 : p = 0.76$
 $H_a : p > 0.76$

5. $H_0 : \mu = 120$
 $H_a : \mu < 120$

6. $H_0 : \sigma = 7.8$
 $H_a : \sigma \neq 7.8$

In #7 – 13, determine the null and alternative hypotheses.

7. **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.

$H_0 :$

$H_a :$

8. **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.

$H_0 :$

$H_a :$

9. **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.

$H_0 :$

$H_a :$

10. **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 underfilling the jars.

$H_0 :$

$H_a :$

11. **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.

$H_0 :$

$H_a :$

12. **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.

$H_0 :$

$H_a :$

13. **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.

$H_0 :$

$H_a :$

For Problems #7 – 13 above state the conclusion based on the results of the test.

14. For the hypotheses in problem 7, the null hypothesis is rejected.

15. For the hypotheses in problem 8, the null hypothesis is not rejected.

16. For the hypotheses in problem 9, the null hypothesis is not rejected.

17. For the hypotheses in problem 10, the null hypothesis is rejected.

18. For the hypotheses in problem 11, the null hypothesis is not rejected.

19. For the hypotheses in problem 12, the null hypothesis is not rejected.

20. For the hypotheses in problem 13, the null hypothesis is rejected.