Sample Quiz 5

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

1) We want to test $H_0: \mu = 520$ versus $H_1: \mu \neq 520$ at $\alpha = 0.05$. Suppose that the sample of 40 observations indicates a sample mean of 308.9 and the population standard deviation of 597.8. Which of the following is correct?

A) since the test statistic is less than the critical value, we do not reject $H_0$
B) since the test statistic is greater than the critical value, we do not reject $H_0$
C) since the test statistic is less than the critical value, we reject $H_0$
D) since the test statistic is greater than the critical value, we reject $H_0$

2) We have created a 95% confidence interval for $\mu$ with the result (10, 15). What conclusion will we make if we test $H_0: \mu = 16$ versus $H_1: \mu \neq 16$ at $\alpha = 0.05$?

A) Accept $H_0$  
B) Reject $H_0$.  
C) Fail to reject $H_0$  
D) None

3) If, as a result of a hypothesis test, we reject the null hypothesis when it is false, then we have committed

A) no error.  
B) a Type II error.  
C) a Type I error.  
D) an error.

Question 4–6: How many Kleenex should the Kimberly Clark Corporation package of tissues contain? Researchers determined that 60 tissues is the average number of tissues used during a cold. Suppose a random sample of 100 Kleenex users yielded the following data on the number of tissues used during a cold: $\overline{X} = 52, s = 22$.

4) Give the null and alternative hypotheses to determine if the number of tissues used during a cold is less than 60.

A) $H_0: \overline{X} \geq 60$ and $H_1: \overline{X} < 60$  
B) $H_0: \mu \geq 60$ and $H_1: \mu < 60$  
C) $H_0: \overline{X} = 52$ and $H_1: \overline{X} \neq 52$  
D) $H_0: \mu \leq 60$ and $H_1: \mu > 60$

5) Using the sample information provided, calculate the value of the test statistic.

A) $t = (52 - 60) / (22/100^2)$  
B) $t = (52 - 60) / 22$  
C) $t = (52 - 60) / (22/100)$  
D) $t = (52 - 60) / (22/10)$

6) Suppose the test statistic does fall in the rejection region at $\alpha = 0.05$. Which of the following is correct?

A) At $\alpha = 0.10$, we do not reject $H_0$.  
B) At $\alpha = 0.05$, we reject $H_0$.  
C) At $\alpha = 0.05$, we accept $H_0$.  
D) At $\alpha = 0.05$, we do not reject $H_0$.

A major videocassette rental chain is considering opening a new store in an area that currently does not have any such stores. The chain will open if there is evidence that more than 5,000 of the 20,000 households in the area are equipped with videocassette recorders (VCRs). It conducts a telephone poll of 300 randomly selected households in the area and finds that 96 have VCRs.

7) State the test of interest to the rental chain.

A) $H_0: p \leq 0.32$ versus $H_1: p > 0.32$  
B) $H_0: \mu \leq 5,000$ versus $H_1: \mu > 5,000$  
C) $H_0: p \leq 5,000$ versus $H_1: p > 5,000$  
D) $H_0: p \leq 0.25$ versus $H_1: p > 0.25$

8) The $p$-value associated with the test statistic in this problem is approximately equal to

A) 0.0026  
B) 0.0013  
C) 0.0051  
D) 0.0100

9) The decision on the hypothesis test using a 3% level of significance is

A) no decision should be make  
B) to reject $H_0$.  
C) to fail to reject $H_0$  
D) to accept $H_0$
MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

1) C
2) B
3) A
4) B
5) D
6) B
7) D
8) A
9) B