6.4 review

Name_____

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

Solve the problem.

1) Use the formula to find the standard error of the distribution of differences in sample means, $\bar{x}_1 - \bar{x}_2$.
   Samples of size 35 from Population 1 with mean 4.0 and standard deviation 1.8 and samples of size 45 from Population 2 with mean 2.1 and standard deviation 1.3
   Round your answer for the standard error to two decimal places.
   A) 0.38   B) 1.8   C) 0.25   D) 0.36

1) _____

2) Use a t-distribution to answer this question. Assume the samples are random samples from distributions that are reasonably normally distributed, and that a t-statistic will be used for inference about the difference in sample means. State the degrees of freedom used.
   Find the endpoints of the t-distribution with 5% beyond them in each tail if the samples have sizes n1=7 and n2=10.
   Enter the exact number for the degrees of freedom and round your answer for the endpoints to two decimal places.
   A) *df=10 endpoints:*(-2.262, +2.262)   B) *df=9 endpoints:*(-1.833, +1.833)
   C) *df=6 endpoints:*(-1.943, +1.943)   D) *df=7 endpoints:*(-2.447, +2.447)

2) _____

3) Use a t-distribution to answer this question. Assume the samples are random samples from distributions that are reasonably normally distributed, and that a t-statistic will be used for inference about the difference in sample means. State the degrees of freedom used.
   Find the propotion in a t-distribution above 2.1 if the samples have sizes n1=12 and n2=22.
   Enter the exact answer for the degrees of freedom and round your answer for the area to three decimal places.
   A) *df=21 proportion=0.024*   B) *df=12 proportion=0.029*
   C) *df=22 proportion=0.024*   D) *df=11 proportion=0.030*

3) _____

Provide an appropriate response.

4) A t-distribution is an appropriate model for a distribution of the standardized difference in two sample means if both of the sample sizes are large, but the distributions are not normal.
   A) False   B) True

4) _____

5) A t-distribution is an appropriate model for a distribution of the standardized difference in two sample means if both of the sample sizes are small, but the distributions are normal.
   A) False   B) True

5) _____

6) A t-distribution is an appropriate model for a distribution of the standardized difference in two sample means if one of the samples is small and one is large, but the distributions are not normal.
   A) True   B) False

6) _____

210 first-year college students were randomly assigned roommates. For the 78 students assigned to roommates who brought a video game to college: average GPA after the first semester was 2.84, with a standard deviation of 0.669. For the 132 students assigned to roommates who did not bring a video game to college, average GPA after the first semester was 3.105, with a standard deviation of 0.625. We are interested in a 90% confidence interval for the average difference in GPA. (list those with video games first)

7) Is it reasonable to use a t-distribution for inference about the average difference in GPA?   7) _____

    A) No   B) yes

8) degrees of freedom for t-distribution   8) _____

    A) 78   B) 132   C) 77   D) 131

9) What is the best estimate of the average difference in GPA?   9) _____

    A) 0.044   B) 0.265   C) -0.265   D) -0.044

10) $t^* = ?$ 10) _____

    A) 1.664   B) 1.667   C) 1.292   D) 1.645

11) $SE = ?$ 11) _____

    A) 0.054   B) 0.076   C) 0.093   D) 0.101

12) What is the margin of error?   12) _____

    A) 0.098   B) 0.126   C) 0.155   D) 1.832

13) 90% confidence interval for the average difference in GPA.   13) _____

    A) (-0.391, -0.139)   B) (-0.111, 0.199)   C) (-0.363, -0.176)   D) (-0.42, -0.11)

14) Is it plausible that there is " No difference in GPA between those getting assigned a roommate who brought a video game to college and who did not bring a video game to college"   14) _____

    A) No   B) Yes

A researcher wants to know whether athletic men are more flexible than non-athletic men. For this experiment, a man who exercised vigorously at least four times per week was considered "athletic." Flexibility is measured in inches on a sit & reach box. Test the researcher's claim using the following summary statistics:

Athletic men	Non-athletic men
$n = 50$	$n = 40$
$\bar{x} = 4.3$ inches	$\bar{x} = 3.2$
$s = 2.1$ inches	$s = 1.0$ inches

Assume that all conditions for testing have been met.

15) State the null and alternative hypotheses.   15) _____

    Let group 1 be the athletic men and group 2 be the non-athletic men.

    A) $H_0: \mu_1 = \mu_2$ B) $H_0: \mu_1 < \mu_2$ C) $H_0: \mu_1 = \mu_2$ D) $H_0: \mu_1 = \mu_2$

         $H_a: \mu_1 > \mu_2$ $H_a: \mu_1 = \mu_2$ $H_a: \mu_1 < \mu_2$ $H_a: \mu_1 \neq \mu_2$

16) What is the test statistic?   16) _____

    A) z = -2.69   B) t = 1.26   C) t = -1.623   D) t = 3.269

17) Use a significance level of $\alpha = 0.05$. What is the p_value? 17) _____

    A) 0.0000   B) 0.0036   C) 0.0022   D) 0.0011

18) At the 5% significance level, state your decision regarding the null hypothesis and your conclusion 18) _____
about the original claim.

    A) Reject the null hypothesis; there is strong evidence to suggest that athletic men are more flexible than non-athletic men.

    B) Reject the null hypothesis; there is not strong evidence to suggest that athletic men are more flexible than non-athletic men.

    C) Fail to reject the null hypothesis; there is not strong evidence to suggest that athletic men are more flexible than non-athletic men.

    D) Fail to reject the null hypothesis; there is strong evidence to suggest that athletic men are more flexible than non-athletic men.