6.5 review

Name_____

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

Provide an appropriate response.

1) A data collection method is described to investigate a difference in means. Determine which data analysis method is more appropriate: paired data difference in means or difference in means with two separate groups.
To study the effect of sitting with a laptop computer on one's lap on scrotal temperature, 29 men have their scrotal temperature tested before and then after sitting with a laptop for one hour. 1) _____
A) Paired data difference in means
B) Difference in means with two separate groups

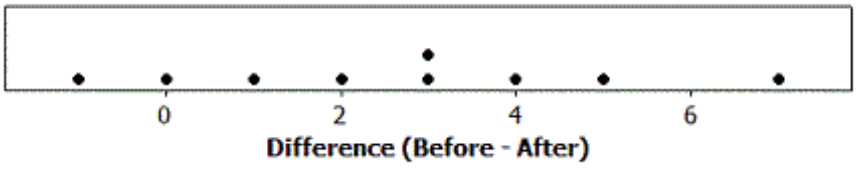
2) A data collection method is described to investigate a difference in means. Determine which data analysis method is more appropriate: paired data difference in means or difference in means with two separate groups.
In a study to determine whether the color red increases how attractive men find women, one group of men rate the attractiveness of a woman after seeing her picture on a red background and another group of men rate the same woman after seeing her picture on a white background. 2) _____
A) Difference in means with two separate groups
B) Paired data difference in means

Zumba, often described as a Latin-inspired dance fitness party, is currently one of the most popular group fitness classes, but its health benefits have been little studied. An exercise science professor at a large university conducted a study to investigate some of the health benefits of Zumba. He recorded the weight of 9 female college students before they began a six week long Zumba program. As part of the program, they took a 60 minute long Zumba class three days a week. At the end of the program, the subjects were weighed again. Of interest is their weight loss, defined as weight before the program started minus weight after completing the program. The results:

Before Weight	134	152	145	120	136	129	163	147	132
After Weight	131	147	144	121	134	125	156	144	132
Difference	3	5	1	-1	2	4	7	3	0

(Before-After)

	n	$\bar{x}$	s
Before Weig	9	139.7778	13.1508
After Weight	9	137.1111	11.3407
Difference (Before-After)	9	2.667	2.50



3) Which data analysis method is more appropriate in this situation: paired data difference in means or difference in means with two separate groups 3) _____
A) difference in means with two separate groups
B) paired data difference in means

4) Is it reasonable to use a t-distribution for inference about the mean weight loss? 4) _____

A) No, Because the sample size is small

B) Yes. Even though the sample size is small, the distribution appear reasonably symmetric with no major outliers.

5) degrees of freedom for t-distribution 5) _____

A) 9 B) 8 C) 18 D) 17

6) for 99% confidence level, $t^* = ?$ 6) _____

A) 2.896 B) 3.250 C) 1.860 D) 3.355

7) What is the point estimate of the mean weight loss? 7) _____

A) 139.778 B) 2.667 C) 2.5 D) 137.111

8) $SE = ?$ 8) _____

A) 0.8839 B) 0.8333 C) 0.8890 D) 0.9429

9) What is the margin of error? 9) _____

A) 2.5 B) 2.413 C) 2.708 D) 2.796

10) Construct a 99% confidence interval for the mean weight loss. 10) _____

A) (-0.296, 5.296) B) (-0.129, 5.463) C) (1.834, 3.500) D) (0.254, 5.080)

Test, at the 1% level, if there is evidence that the Zumba program is effective for weight loss. Include all of the details of the test.

11) State the null and alternative hypotheses. 11) _____

Let $\mu 1$ be mean weight before the program began and $\mu 2$ be mean weight after the program has completed

A) $H_0: \mu 1 < \mu 2$, $H_a: \mu 1 = \mu 2$

B) $H_0: \mu 1 = \mu 2$, $H_a: \mu 1 \neq \mu 2$

C) $H_0: \mu 1 = \mu 2$, $H_a: \mu 1 > \mu 2$

D) $H_0: \mu 1 = \mu 2$, $H_a: \mu 1 < \mu 2$

12) What is the test statistic? 12) _____

A) z = -2.69 B) t = 3.2004 C) t = 0.4607 D) t = 1.26

13) Use a significance level of $\alpha = 0.01$. What is the p_value? 13) _____

A) 0.0000 B) 0.0063 C) 0.0022 D) 0.0036

14) At the 1% significance level, state your decision regarding the null hypothesis and your conclusion about the original claim. 14) _____

A) Fail to reject the null hypothesis; there is insuffient evidence to conclude that Zumba is effective for weight loss.

B) Reject the null hypothesis; there is suffient evidence to conclude that Zumba is effective for weight loss.

C) Reject the null hypothesis; there is insuffient evidence to conclude that Zumba is effective for weight loss.

D) Fail to reject the null hypothesis; there is suffient evidence to conclude that Zumba is effective for weight loss.