

Intro to Stats Spring 2021 Exam 1 Grades

Student name: Jacob Hood

Question	Points Got
1a	2
1b	2
2a	2
2b	2
2c	1.5
2d	2
3	0
4 (bonus)	0.5
Total	12/14

Good work! Make sure you copy the number in the question correctly next time!

2c: $\bar{y}_2 = 12$

3: see solution manual

4: see solution manual

Exam 1 – Jacob Hood

Question 1)

- a) Standard error = standard deviation/ $\sqrt{\text{sample size}}$
 - a. Standard error = 0.8
- b) CI = $\text{pop.mean} (16) \pm z_{0.025} * \text{standard error} (0.8)$
 - a. CI = (14.432, 17.568)

Question 2)

- a) $H_0 = \mu_1 - \mu_2 = 0 // H_a = \mu_1 - \mu_2 \neq 0$
- b) $se = \sqrt{(se_1)^2 + (se_2)^2}$
 - a. $se = 1.962$
- c) $t = (\bar{y}_1 - \bar{y}_2) - \mu_0 / se = ((20-10) - 0) / 1.962$
 - a. $t = 5.097$
- d) $\text{crit_val} = qt(p = .5 * 0.05, df = 99)$
 - a. $\text{crit_val} = 1.984$
 - b. The test statistic is > than critical value so we reject the null hypothesis

Question 3)

- Sorry, I have no clue how to do this one

Bonus)

- This is because the sample mean in this case is a biased estimator – this is because the sampling distribution of the sample mean does not center around the parameter. If it did, it would be unbiased and not under or overestimate. Drawing multiple samples helps to resolve this issue