Statistics 2 Quiz 2

Hand your completed quiz in before the due date. Do not forget to write down your name and student ID number. Marks will be awarded for this quiz based on the clarity of your answers. The marker will pay close attention to the logic of your answers. Please show all your working.

Q.1 Find

(a) \( t(12, 0.01) \).

(b) \( t(22, 0.025) \).

(c) \( t(50, 0.10) \).

Q.2 Construct the 95% confidence interval for the mean \( \mu \) using the sample information \( n = 24, \bar{x} = 16.7 \), and \( s = 2.6 \).

Q.3 The recommended number of hours of sleep per night is 8 hours, but everybody “knows” that the average Soka student sleeps less than 8 hours. The number of hours slept last night by 8 randomly selected Soka students is listed here:

| 5 | 6 | 7 | 8 | 7 | 5 | 5.5 | 6.5 |

Conduct the following hypothesis test. What can you conclude?

\( H_0 : \mu = 8 \), \( H_a : \mu < 8 \), \( \alpha = 0.05 \).

- You need to review Section 9.2 from Stat1 for Q.4 and Q.5.

Q.4 A bank randomly selected 250 saving account customers and found that 110 of them also had saving accounts at another bank. Construct a 95% confidence interval for the true proportion of customers who also have saving accounts in another bank.

Q.5 An insurance company states that 90% of its claims are settled within 30 days. A consumer group selected a random sample of 75 of the company’s claims to test this statement. If the consumer group found that 55 of the claims were settled within 30 days, do the consumers have sufficient reason to say that less than 90% of the claims are settled within 30 days? Use \( \alpha = 0.05 \).

Q.6 Find these critical values by using Table 8 of Appendix B.

(a) \( \chi^2(18, 0.01) \).

(b) \( \chi^2(16, 0.025) \).

(c) \( \chi^2(22, 0.95) \).

Q.7 A random sample of 51 observations was selected from a normally distributed population. The sample mean was \( \bar{x} = 98.2 \), and the sample variance was \( s^2 = 37.5 \). Does this sample show sufficient reason to conclude that the population standard deviation is not equal to 8 at the 0.05 level of significance?