STA2023 . Practice 8. Broward College. Answers

1) A
2) C
3) D
4) B
5) C
6) D
7) C
8) B
9) D
10) C
11) D
12) D
13) A
14) C
15) H_0: p = 0.03. H_1: p > 0.03. Test statistic: z = 1.57. P–value: p = 0.0582.
Critical value: z = 2.33. Fail to reject null hypothesis. There is not sufficient evidence to warrant rejection of the manager's claim that production is not really out of control.
16) H_0: p = 0.01. H_1: p > 0.01. Test statistic: z = 4.92. P–value: p = 0.0001.
Critical value: z = 2.33. Reject null hypothesis. There is sufficient evidence to warrant rejection of the claim that no more than 1% are defective. Note: Since the term "no more than" is used, the translation is p ≤ 0.01. Therefore, the competing hypothesis is p > 0.01.
17) H_0: p = 0.5. H_1: p < 0.5. Test statistic: z = –1.31. P–value: p = 0.0951.
Critical value: z = –1.645. Fail to reject null hypothesis. There is not sufficient evidence to warrant rejection of the claim that at least half of all voters prefer the Democrat.
18) H_0: μ = 32.6. H_1: μ ≠ 32.6. Test statistic: t = 4.36. Critical values: t = ±2.145. Reject H_0. There is sufficient evidence to warrant rejection of the claim that the mean is 32.6.
19) H_0: μ = 2.85. H_1: μ > 2.85. Test statistic: t = 1.85. Critical value: t = 2.896. Fail to reject H_0. There is not sufficient evidence to support the claim that the mean is greater than 2.85.
20) H_0: μ = 35.0. H_1: μ ≠ 35.0. Test statistic: t = 7.252. Critical values: t = –2.861, 2.861. Reject H_0. There is sufficient evidence to warrant rejection of the claim that the mean is equal to 35.0.
21) H_0: μ = 520 hrs. H_1: μ > 520 hrs. Test statistic: t = 2.612.
0.01 < P–value < 0.025. Reject H_0. There is sufficient evidence to support the claim that the mean is greater than 520 hours.
22) H_0: μ = 14 oz. H_1: μ ≠ 14 oz. Test statistic: t = 0.408. Critical values: t = ±3.499. Fail to reject H_0. There is not sufficient evidence to warrant rejection of the claim that the mean weight is 14 ounces.
23) $\alpha = 0.1$
Test statistic: t = 1.57
P–value: p = 0.1318
Critical values: t = ±1.729
Because the test statistic, t < 1.729, we fail to reject the null hypothesis. There is not sufficient evidence to warrant rejection of the claim that $\mu = 132$ lb
24) $\alpha = 0.05$
Test statistic: t = –2.236
P–value: p = 0.0399
Critical values: t = ±2.120
Because the test statistic, t < –2.120, we reject the null hypothesis. There is sufficient evidence to warrant rejection of the claim that $\mu = \$30{,}000$
25) $\alpha = 0.01$
Test statistic: t = 2.6898 P–value: p = 0.0066 Critical value: t = 2.508 Because the test statistic, t > 2.508, we reject the null hypothesis. There is sufficient evidence to accept the claim that $\mu > 220{,}000$ miles
26) H_0: μ = 22; H_1: μ ≠ 22. Test statistic: z = -10.33. P–value: 0.0002. Because the P–value is less than the significance level of $\alpha = 0.05$, we reject the null hypothesis. There is sufficient evidence to warrant rejection of the claim that the population mean temperature is $22°C$.