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| **Sign Test: Tutorial** |
| 1. Recent studies of the private practices of physicians who saw no Medicaid patients suggested that the median length of each patient visit was 22 minutes. It is believed that the median visit length in practices with a large Medicaid load is shorter than 22 minutes. A random sample of 20 visits in practices with a large Medicaid load yielded, in order, the following visit lengths:  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | 9.4 | 13.4 | 15.6 | 16.2 | 16.4 | 16.8 | 18.1 | 18.7 | 18.9 | 19.1 | | 19.3 | 20.1 | 20.4 | 21.6 | 21.9 | 23.4 | 23.5 | 24.8 | 24.9 | 26.8 |   Based on these data, is there sufficient evidence to conclude that the median visit length in practices with a large Medicaid load is shorter than 22 minutes?   1. The production manager of a large undertaking randomly paid 10 visits to the worksite in a month. The no. of workers who reported late for the duty was found to be 2, 4, 5, 1, 6, 3, 2, 1, 7&8 respectively. Using sign test verify the claim of the production supervisor that on an average, not more than 3 workers report late for duty .use 5% level of significance. 2. A hypothesis test is being conducted about the median age of female members of the Trim Fitness Center. In a sample of 40 female members, 25 are older than 34, 14 are younger than 34, and 1 is 34. Is there sufficient evidence to reject H0: median is 34 years? 3. A study is done to determine the effects of removing a renal blockage in patients whose renal function is impaired because of advanced metastatic malignancy of neurologic cause. The arterial blood pressure of a random sample of 10 patients is measured before and after surgery for treatment of the blockage yielded the following data:   minitab  Based on the sign test, can we conclude that the surgery tends to lower arterial blood pressure?   1. A psychologist claims that the number of repeat offenders will decrease if first time offenders complete a particular rehabilitation course. You randomly select 10 prisons and record the number of repeat offenders during a two-year period. Then, after first-time offenders complete the course, you record the number of repeat offenders at each prison for another two-year period. The results are shown in the following table. At 0.05 significance level, can you support the psychologist’s claim?  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | Prison | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | | Before | 21 | 34 | 9 | 45 | 30 | 54 | 37 | 36 | 33 | 40 | | After | 19 | 22 | 16 | 31 | 21 | 30 | 22 | 18 | 17 | 21 |  1. A bank manager claims that the median number of customer per day is no more than 750. A teller doubts the accuracy of this claim. The number of bank customers per day for 16 randomly selected days are listed below. At 0.05 significance level, can the teller reject the bank manager’s claim?   775, 765, 801, 742, 754, 753, 739, 751, 745, 750, 777, 769, 756, 760, 782, 789   1. A professor is trying to determine if there is a significant difference in the Verbal and Math ACT scores of students enrolled in General Math class. The respective scores for students in his class are given below. Using this class as a sample, test to see whether General Math students significantly tend to score higher on either Verbal or Math ACT.  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | (24, 18) | (22, 19) | (18, 19) | (20, 24) | (14, 16) | (18, 15) | (24, 22) | | (15, 16) | (23, 17) | (22, 23) | (26, 30) | (28, 26) | (16, 18) | (22, 20) | | (19, 18) | (20, 20) | (24, 22) | (18, 16) | (24, 21) | (18, 16) | (19, 19) | | (20, 26) | (15, 16) | (19, 18) | (21, 25) | (28, 26) | (25, 23) | (24, 24) | |