**4.** Tesla Motors needs to buy axles for their new car. They are considering using Chris Cross Manufacturing as a vendor. Tesla’s requirement is that 95% of the axles are 100 cm ± 2 cm.  The following data is MegaStat output from a test run from Chris Cross Manufacturing.   Should Tesla select them as a vendor? Explain your answer.

Descriptive statistics

|  |  |
| --- | --- |
| count | 16  |
| mean | 99.938  |
| sample variance | 2.313  |
| sample standard deviation | 1.521  |
| minimum | 97  |
| maximum | 102.9  |
| range | 5.9  |
|   |   |
| population variance | 2.169  |
| population standard deviation | 1.473  |
|   |   |
| standard error of the mean | 0.380  |
|   |   |
| tolerance interval 95.45% lower | 96.896  |
| tolerance interval 95.45% upper | 102.979  |
|    half-width | 3.042  |
|   |   |
| 1st quartile | 98.900  |
| median | 99.850  |
| 3rd quartile | 100.475  |
| interquartile range | 1.575  |
| mode | 98.900  |

**5.**  A PC manufacturer claims that no more than 5% of their machines are defective. In a random sample of 100 machines, it is found that 8.5% are defective. The manufacturer claims this is a fluke of the sample. At a .02 level of significance, test the manufacture’s claim, and explain your answer..

MegaStat Output
Hypothesis test for proportion vs. hypothesized value

|  |  |  |
| --- | --- | --- |
| **Observed** | **Hypothesized** |   |
| 0.085 | 0.05 |  p (as decimal) |
| 9/100 | 5/100 |  p (as fraction) |
| 8.5 | 5.0 |  X |
| 100 | 100 | n |

|  |  |
| --- | --- |
|  0.0218 |  std. error |
|   1.61 |  Z |
|     .0541 |  p-value (one-tailed, upper) |

6. The following table gives the number of claims at a large insurance company by kind and geographical region.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|   | East | South  | Midwest  | West  | Totals  |
| Hospitalization  | 102  | 98  | 39  | 62  | 301  |
| Physician’s Visit  | 263  | 514  | 120  | 351  | 1248  |
| Outpatient Treatment  | 100  | 226  | 65  | 99  | 490  |
| Totals  | 465  | 838  | 224  | 512  | 2039  |

(A) Referring to the above table, if a bill is chosen at random, what is the probability that it is either from the East or from the West?
(B) Referring to the above table, given that the bill is from the Midwest, what is the probability that it is for a Physician's Visit?