1. A sample of concrete specimens of a certain type is selected, and the compressive strength of each specimen is determined. The mean and standard deviation are calculated as and , and the sample histogram is found to be bell shaped. (Hint use Empirical Rule)
   1. Approximately what percentage of the sample observations are between 2500 and 3500?
   2. Approximately what percentage of sample observations are outside the interval from 2000 to 4000?
   3. Approximately what percentage of sample observations are between 2000 and 2500?
2. In December 2007, the average price of regular unleaded gasoline excluding taxes in the US was $3.06 per gallon. Assume that the standard deviation price per gallon is $0.06 per gallon to answer the following. (Hint use Chebyshev’s Theorem)
   1. What minimum percentage of gasoline stations had prices within 3 standard deviations of the mean?
   2. What minimum percentage of gasoline stations had prices within 2.5 standard deviations of the mean? What are the gasoline prices that are within 2.5 standard deviations of the mean?
   3. What is the minimum percentage of gasoline stations that had prices between $2.94 and $3.18?

3. Eastern States Bank and Trust monitors its drive-thru service times electronically to ensure that its speed of service is meeting the company’s goals. A sample of 28 drive-thru times was recently taken and is shown here.

|  |  |  |  |
| --- | --- | --- | --- |
| Speed of Service  (time in seconds) | | | |
| 68 | 71 | 73 | 76 |
| 79 | 83 | 85 | 88 |
| 90 | 92 | 93 | 103 |
| 116 | 119 | 130 | 134 |
| 138 | 145 | 146 | 147 |
| 156 | 156 | 162 | 178 |

1. Find the median, lower and upper quartiles for the data.
2. Find the lower and upper inner fences. Are there any outliers? Why/Why not?
3. Construct a box plot for the sample data.