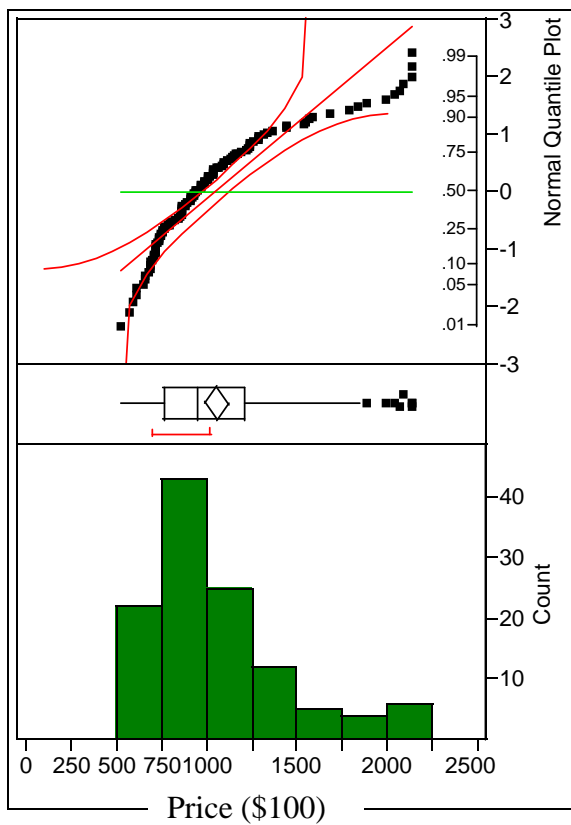


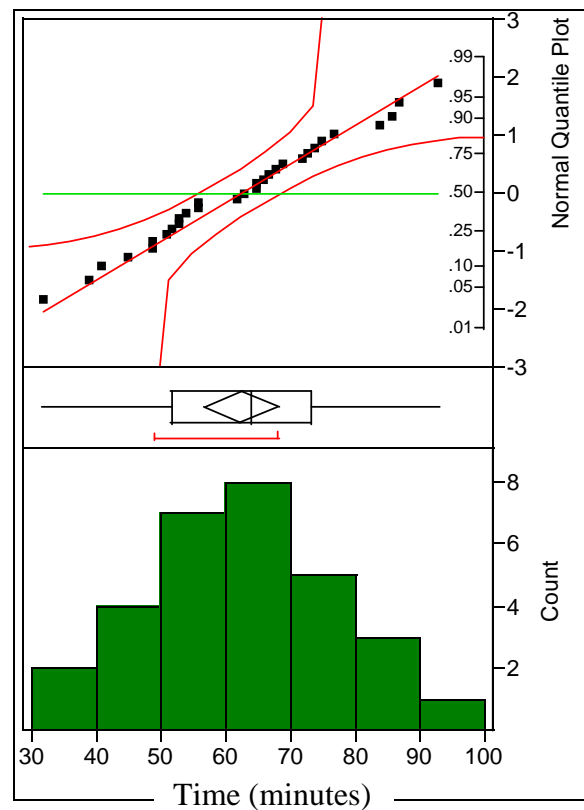
## Stat 101 Lab 3 Solution to Problem 2

2. When working with sample data, one often asks, “Could this sample have come from a population whose distribution follows a normal model?” For each of the samples below, look at the distribution of the sample, describe in words what you see in each of the plots (histogram, box plot and normal quantile plot), and comment on whether the sample could have come from a population whose distribution follows a normal model.

a) Prices (\$100) for 117 randomly selected homes.



b) Time (minutes) spent at fitness center for 30 randomly selected students.



2. “Could this sample have come from a population whose distribution follows a normal model?”

a) Home prices

- Histogram

**The histogram is mounded to the left (around \$75,000 to \$100,000) and skewed to the right. The center is around \$100,000 and the prices are spread from \$50,000 to \$225,000.**

- Box plot

**The box plot shows a skew to the right (note the mean – center of the diamond is larger than the median – vertical line in box) with a number of potential outliers toward the larger values.**

- Normal Quantile Plot

**The prices form a curve that rises quickly, levels off and then rises quickly at the end. This curve does not follow the straight line indicating a normal distribution.**

- Normal Distribution?

**The right skew shape, potential outliers on the high side and the curved pattern of the prices in the normal quantile plot all point to this sample coming from a population whose distribution does not follow a normal model.**

b) Fitness center times

- Histogram

**The histogram is fairly symmetrical and mounded in the middle. The center is in the 60 to 70 minute range. The values are spread from 30 minutes to 100 minutes.**

- Box plot

**The box plot is fairly symmetric (note the mean and median are fairly close). There are no apparent outliers.**

- Normal Quantile Plot

**The times show no distinctive curve and fall fairly close to the line representing a normal distribution.**

- Normal Distribution?

**Although not perfect, the fairly symmetric plots and no marked departure from the line representing the normal model on the normal quantile plot indicates that this sample could have come from a population whose distribution follows a normal model.**