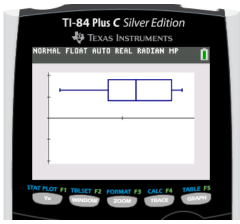
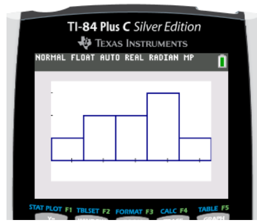
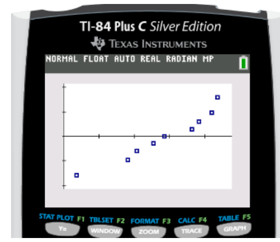
Answers Ch 10.2 p. 649 - 650

**38.**

a) Although the sample is small, n = 9, the box plot and histogram show no apparent skewness, outliers, or gaps. The NNP shows a somewhat linear trend. A normal approximation is appropriate.




**b)**

**State:** We will create a 95% confidence interval for a 1-sample mean to estimate the true population mean of change in percent levels of polyphenols in the blood of all adults.

**Plan:**

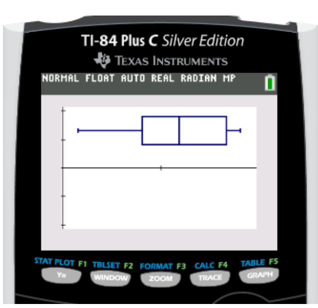
Parameter: µ = the true population mean of change in percent levels of polyphenols in the blood of all males.

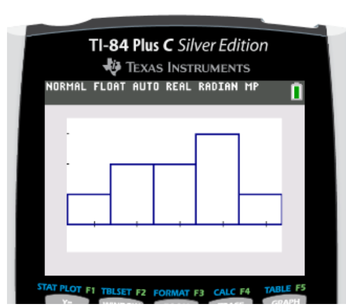
Random: The problem states a random sample of 9 ***healthy men*** was assigned to drink a bottle of red wine daily for two weeks. Therefore our results will only be generalized to the ***population of healthy men***.

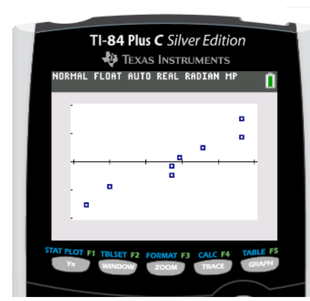
Independence: population of all adults $\geq$ 10(9) Condition met for independence

Large Counts: n = 9 Sample size small. Must look at graph to decide distribution of sample.

Boxplot shows skewness and no outliers present. Histogram shows no gaps or clusters. Normal Probability Plot show linear trend. Normal Approximation appropriate




**Do:** $\bar{x} = 255$ $s = 2.517$ $n = 9$ $df = 8$ $t^* = 1.86$ $5.5 \pm 1.86\left(\frac{2.517}{\sqrt{9}}\right)$ $(3.5653, 7.4347)$

We are 95% confident the true mean population change in percent levels of polyphenols in the blood of ***healthy men*** is in the interval 3.57% to 7.06% for a sample size of 9 healthy men.

**c)** The data are paired because the researcher collected blood and recorded the level of polyphenol for each subject before and after drinking the wine. Each observation is independent of the others.

This ***would not*** be considered a **matched pairs experiment** because each subject **only received one treatment**.

**39. State:** We will create a 95% confidence interval for a 1-sample mean to estimate the true population mean of the HAV angle measure of all young patients who require HAV surgery.

**Plan:** Parameter: μ = the true population mean of the HAV angle measure of all young patients who require HAV surgery.

Random: The problem states that we can consider these 38 patients a random sample of all young patients who require HAV surgery.

Independence: population of all young patients who require HAV surgery$\geq$ 10(38) Condition met for independence

Large Counts: n =38 38 $\geq$ 30 CLT state the sample size is large enough to use Normal approximation.

**Do:** $\bar{x} = 25.42$ $s = 7.475$ $n = 38$ $df = 37$ $t^* = 2.042$ $25.42 \pm 2.042\left(\frac{7.475}{\sqrt{28}}\right)$ $(22.965, 27.875)$

We are 95% confident the true population mean of the HAV angle measure of all young patients who require HAV surgery is between 22.965° and 27.875° for a sample of 38 young adults.

**40. [omitting the outlier patient having a 50° angle of deformity]**

**a) State:** We will create a 95% confidence interval for a 1-sample mean to estimate the true population mean of the HAV angle measure of all young patients who require HAV surgery.

**Plan:**

Parameter: μ = the true population mean of the HAV angle measure of all young patients who require HAV surgery.

Random: The problem states that we can consider these 38 patients a random sample of all young patients who require HAV surgery.

Independence: population of all young patients who require HAV surgery$\geq$ 10(**37**) Condition met for independence

Large Counts: n = **37** 37 $\geq$ 30 CLT state the sample size is large enough to use Normal approximation.

**Do:**

$\bar{x} = 24.76$ $s = 6.34$ $n = 37$ $df = 36$ $t^* = 2.042$ $24.76 \pm 2.042\left(\frac{6.34}{\sqrt{37}}\right)$ $(22.929, 27.911)$

We are 95% confident the true population mean of the HAV angle measure of all young patients who require HAV surgery is between 22.929° and 27.911° for a sample of **37** young adults.

**b)** Although we **decreased the sample size** by 1, which should **increase the variability** of the distribution, we **eliminated the outlier**, so the **standard error decreased** which in turn **decreased the margin of error**. In this case, the interval for n = 37 is smaller than the interval for n = 38.