DATA & STATISTICS REVIEW

Name_____

1. The amount of aluminum contamination (ppm) in plastic of a certain type was determined for a sample of 12 plastic specimens, resulting in the following data

30 87 90 101 102 115 median: 116.5

118 119 119 120 125 170

Find Q_1 95.5 Q_3 119.5 IQR 24

$Q_1 - 1.5$ (IQR) 59.5

$Q_3 + 1.5$ (IQR) 155.5

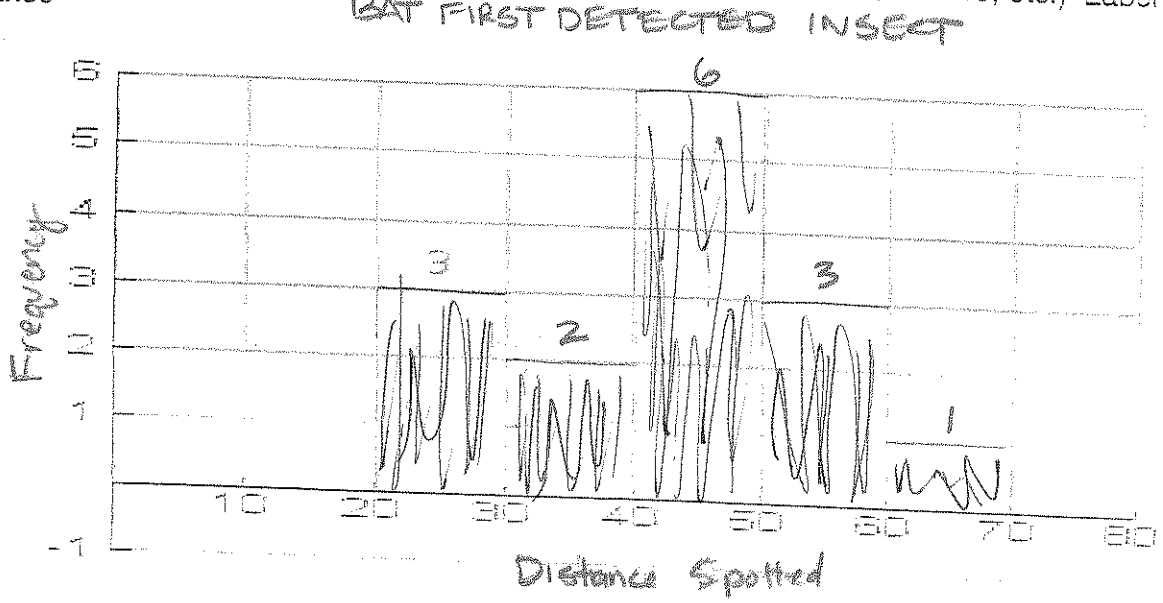
Are there any outliers? Why? (Use the IQR)

Yes, 30 and 170 are both outliers. This is because they fall more than 1.5 times the interquartile range away from their corresponding quartiles.

2. Although bats are not known for their eyesight, they are able to locate prey (mainly insects) by emitting high-pitched sounds and listening for echoes. The following are distances (in cm) at which a bat first detected a nearby insect:

62 23 27 46 52 34 42 40 38 45 20 48 49 51 35

Make a Histogram of the Data with bar width 10 such that (0 – 9, 10 – 19, etc.) Label the x and y axes



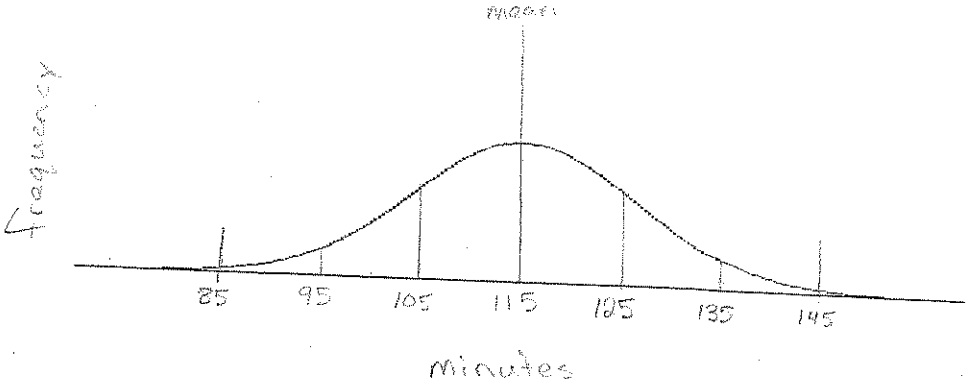
Give the following for this data

Mean 42.13 Median 45 Mode N/A Standard Deviation 21.99 (Sx) or ≈11.59 (σx)

Use 1-Var Stat test

(It didn't indicate sample or population)

3. The average playing time of a library of DVD's is 1 15 minutes and a distribution (graph) of the playing times shows that the data is bell shaped (normally distributed). The standard deviation for this set is 10 min. Label the mean and each location for 1,2 and 3 standard deviations above and below the mean with their value(in minutes) in this situation.



A. On what interval, will you find 95% of the times? Why?

95 min - 135 min

Because that's the rule for normal bell curves

B. What percentage of the times are greater than 125 minutes? Why?

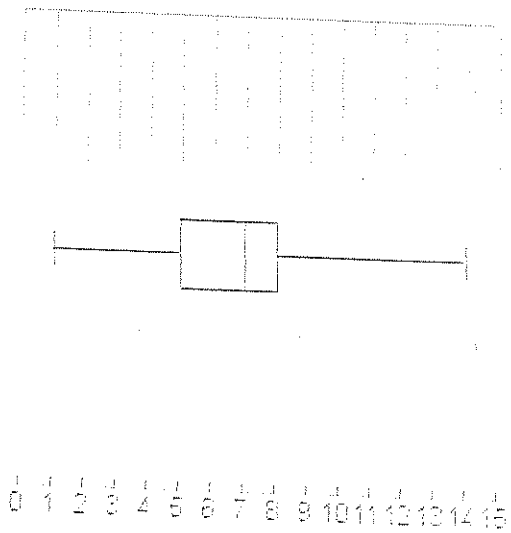
16%

Below 115 is 50%. Then 115-125 is 34%, half of 68%
Added they are 84%. Subtract from 100% to get 16%

C. How many standard deviations from the mean is the time 120 minutes? Why?

+1/2 Because 0 is 115 and 1 is 125. In between is 1/2 and 120

4. Given this box plot, complete the following questions. If the answer is not possible from this information, write "not possible".



A. Give the value of the median

7

B. Give the value of the mean

not possible

C. Give the value of Q_1

5

D. What percent of the scores fall in the box?

50%

E. What percent of the scores fall below Q_3?

75%

F. How many students were in this study?

not possible

5. In this formula for standard deviation, what do each of the variables represent in general?

$$\sqrt{\frac{(x-\bar{x})^2}{n-1}}$$

x All the data points (each data point)

$\bar{x}$ The mean

n The number of data points

6. Show how to find the standard deviation for this set of numbers:

3 5 6 7 8 8 8 9 9

Data	$(x - \bar{x})$ $\bar{x}=7$	$(x - \bar{x})^2$
3	-4	16
5	-2	4
6	-1	1
7	0	0
8	1	1
8	1	1
8	1	1
9	2	4
9	2	4

Sum of $(x - \bar{x})^2$	32

Standard Deviation

$$\sqrt{\frac{(x-\bar{x})^2}{n-1}} = \frac{\sqrt{32}}{8} = \sqrt{4} = 2$$

Round to hundredths