

Do Now: In the table, the data indicate the heights, in inches, of 17 basketball players.
 (Hint: Using your "STAT" key on your calculator)

Height (inches)	Frequency (number)
77	2
76	0
75	5
74	3
73	4
72	2
71	1

- a. What is the mean? 74
- b. What is the median? 74
- c. What is the Mode? 75

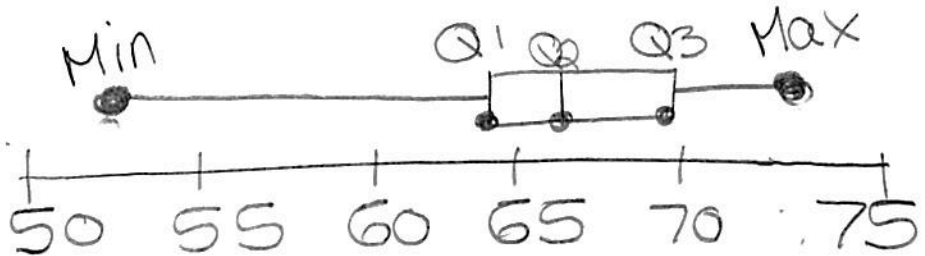
AIM: Finding Quartiles & Constructing a "Box Plot"

1. Find the median of the following data:

53, 60, 61, 63, 64, 65, 65, 65, 65, 66, 66, 67, 67, 68, 69, 70, 70, 71, 71, 73

\downarrow \downarrow \downarrow
 64.5 66 69.5

Min = 53
 1st Q = 64.5
 Med = 66
 3rd = 69.5
 Max = 73



We know that the median of a set of data separates the data into two equal parts. The numbers that separate the set into four equal parts are called Quartiles.

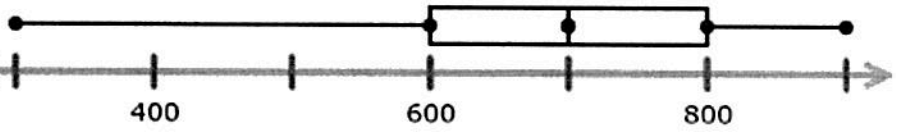
- The 1st quartile (lower) is the median of the lower part of the data.
- The 2nd quartile is another name for the median of the entire set of data.
- The 3rd quartile (upper) is the median of the upper part of the data.

Definition: Percentiles is a number that tells us what percent of the total number of data values lies at or below a given measure.

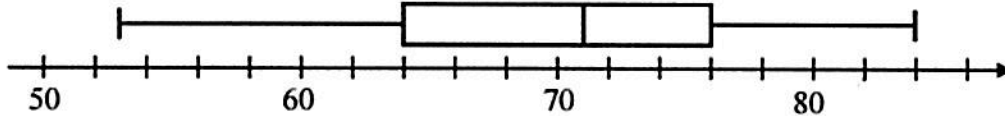
2. The director of Long Island's homeless shelters is tracking the number of food donations received at each shelter every month. This box plot shows the results.

- a) How many donations is 25%? 600
- b) How many donations is 50%? 700
- c) How many donations is 75%? 800

Monthly food donations



3. Twenty of Mr. Kramer's physics students recently took a quiz. The results of this quiz are shown in the following box-and-whiskers diagram. Assume that all scores are whole numbers.

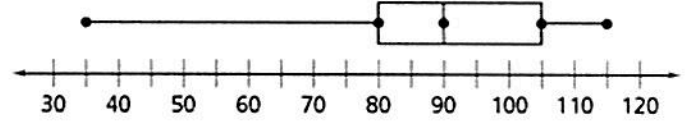


- (a) What was the median score on Kramer's math quiz? 71
- (b) What was the range of the scores on Mr. Kramer's physics quiz? $84 - 53 = 31$
- (c) What score was greater than or equal to 75% of all other scores on this quiz? 76

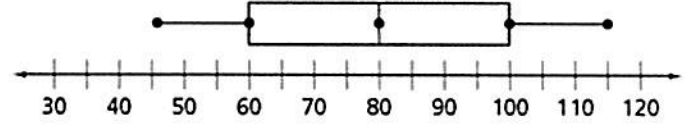
4. The accompanying box plots can be used to compare the annual incomes of two lawyers.

- a) Who earned the lowest amount? Tim
- b) What is 25% of Tim's earnings? 80
- c) What Tim's median earnings? 90
- d) What Dan's median earnings? 80
- e) What is 75% of Tim's earnings? 105

Tim's Earnings (in dollars)

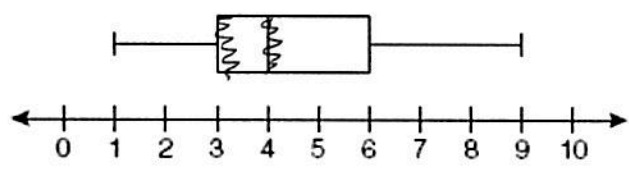


Dan's Earnings (in dollars)



5. A movie theater recorded the number of tickets sold daily for a popular movie during the month of June. The box-and-whisker plot shown below represents the data for the number of tickets sold, in hundreds. Which conclusion can be made using this plot?

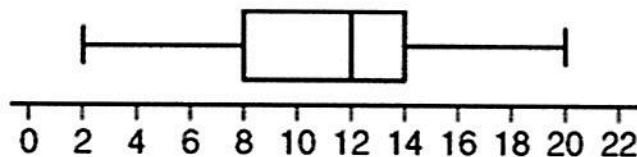
- (1) The second quartile is 600.
- (2) The mean of the attendance is 400.
- (3) The range of the attendance is 300 to 600.



(4) Twenty-five percent of the attendance is between 300 and 400.

PRACTICE PROBLEMS

6. The number of text messages 10 different students sent in 1 day is shown in the box-and-whisker plot below.



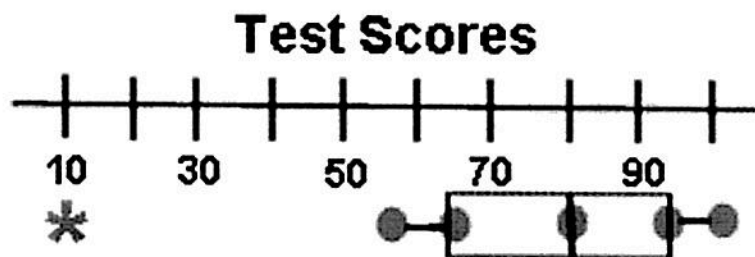
- a) What is the minimum number of text messages sent according to the plot shown? 2
- b) What number is at the 50th percentile according to the plot shown? 12
- c) According to the plot shown, between what two numbers does half of the data lie? $8 \text{ ; } 14$
- d) According to the plot shown, how many text messages are at the 75th percentile (upper quartile)? 14
7. According to the above box and whisker plot, find the following information:

a) Median 80

b) 1st quartile 65

c) 3rd quartile 95

d) Maximum value 100



e) What percent of data is between 65 and 95? $25\% + 25\% = 50\%$

f) What percent of data is greater than 95? 25%

g) What percent of data is less than 95? 75%

8. The accompanying box-and-whisker plots can be used to compare the annual incomes of three professions. Based on the box-and-whisker plots, which statement is true?

- (1) The median income for nuclear engineers is greater than the income of all musicians.
- (2) The median income for police officers and musicians is the same.
- (3) All nuclear engineers earn more than all police officers.
- (4) A musician will eventually earn more than a police officer.

