

Key

# UNIT 10: STATISTICS STUDY GUIDE



1. Identify the following as quantitative (numerical – QN) or qualitative (categorical – QL):

QL The number of times customers pay with cash, credit, check, etc. *categories*

QN The number of customer complaints

QN The total (in \$'s) on various customers' receipts

QL A customer's area code *(can't take average)*

2. Classify each of the data displays by which data set they're used to model: *(QN) OR (QL)*

QN/QL Bar Chart

QN/QL Dot Plot

QL Pie Chart

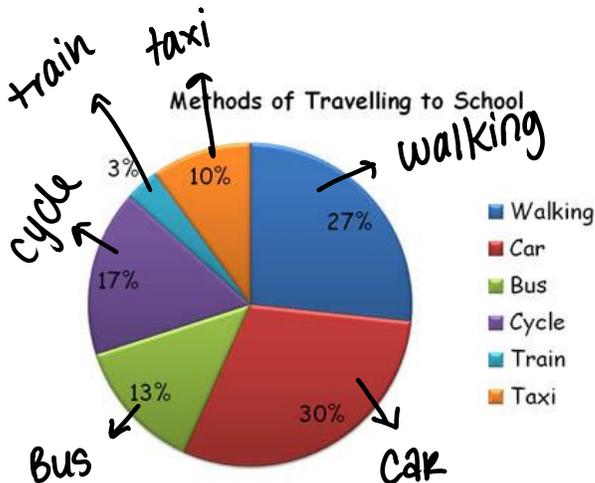
QN Box-and-Whisker

QN Histogram

QL Two-Way Frequency Table

QN Stem-and-Leaf

3. The pie chart below represents the various methods of transportation that CP5 students use to get to school. Determine the following from the pie chart:



1. If there were 100 students, how many students would you expect to arrive at school by bus?

*13*

2. If there were 150 students polled, how many students would you expect get to school by walking or taking the train?

$$27 + 3 = 30$$

$$30 \times 1.5 = 45$$

3. True or False: This data could have been represented by a histogram.

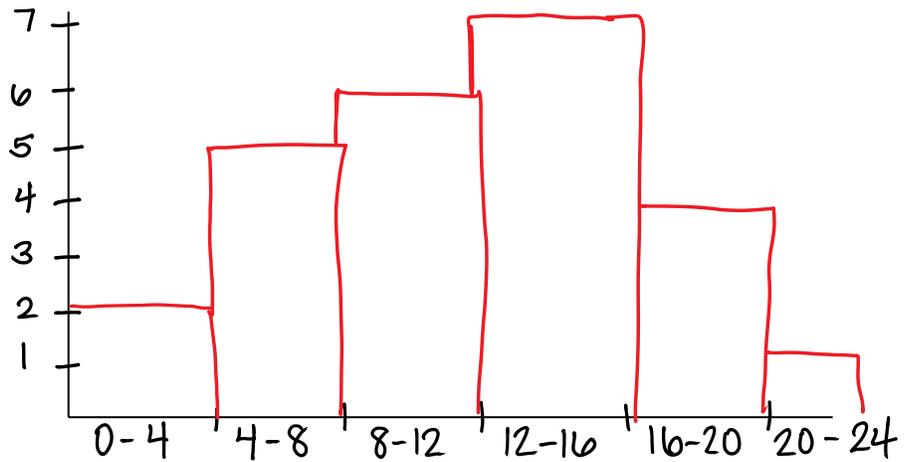
*False*

*histogram → only numerical*

4. The number of home runs by the batters in a local home run derby are listed below. Create a frequency table and histogram (with a title and labeled axes) that represents the data.

~~1~~ ~~7~~ ~~11~~ ~~14~~ ~~2~~ ~~7~~ ~~8~~ ~~8~~ ~~12~~ ~~3~~ ~~10~~ ~~4~~ ~~12~~ ~~7~~ ~~18~~ ~~19~~ ~~24~~ ~~10~~ ~~11~~ ~~13~~ ~~15~~ ~~10~~ ~~14~~ ~~11~~ ~~19~~

Home Run Results	
Home Runs	Frequency
0-4	2
4-8	5
8-12	6
12-16	7
16-20	4
20-24	1



Describe the shape of the distribution (be vocab-specific): almost symmetrical

5. The following data represents Precalculus scores on this semester's final exams amongst two classes. Create a double stem-and-leaf plot to model the data below. Don't forget to create a key!

Period 1: ~~75~~, ~~81~~, ~~95~~, ~~88~~, ~~82~~, ~~83~~, ~~68~~, ~~81~~, ~~90~~, ~~71~~ → mean = 81.4  
 Period 3: ~~64~~, ~~70~~, ~~73~~, ~~98~~, ~~85~~, ~~75~~, ~~82~~, ~~88~~, ~~96~~, ~~70~~ → mean = 80.1

Period 1		Period 3
8	6	4
51	7	0035
83211	8	258
50	9	68

Which class had a stronger performance on the final exam? Prove it with measures of central tendency.

Period 1 had a higher mean

6. The results of a survey on the number of televisions in students' households are shown in the dot plot below.

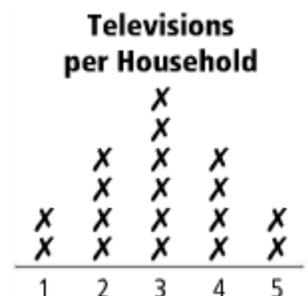
Calculate the mean, median and mode of the data set.

~~1~~ ~~1~~ ~~2~~ ~~2~~ ~~2~~ ~~2~~ ~~3~~ ~~3~~ ~~3~~ ~~3~~ ~~3~~ ~~3~~ ~~4~~ ~~4~~ ~~4~~ ~~4~~ ~~5~~ ~~5~~  
3

mean = 3  
 median = 3

mode = 3

how awesome is that? 😊



Describe the shape of the distribution (be vocab-specific).

symmetrical

7. The number of times a group of students went to the local pool last summer is listed below. Find the 5-number summary and create a box-and-whisker plot to represent the data.

~~11~~   ~~15~~   ~~25~~   ~~3~~   ~~0~~   ~~14~~   35  
~~17~~   ~~8~~   ~~19~~   ~~2~~   33   51   40

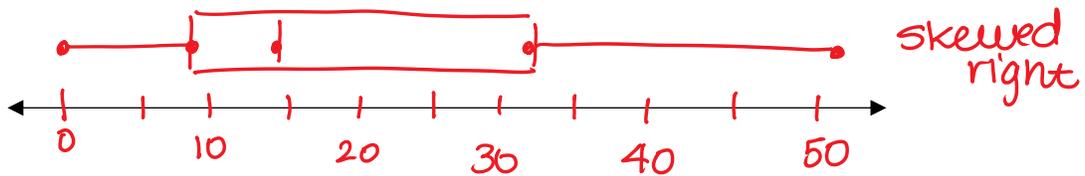
Are there any outliers? Justify your answer with numerical evidence.

NO OUTLIERS  
 b/c  
 $-29.5 - 70.5$

~~0~~   ~~2~~   ~~3~~   8   ~~9~~   ~~11~~   14   |   15   |   ~~17~~   ~~28~~   33   ~~35~~   ~~40~~   ~~51~~

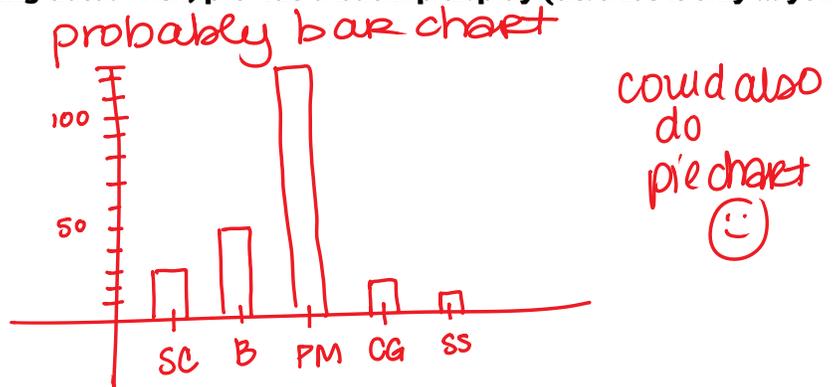
$Q1$     $14.5$     $Q3$

Minimum	Q1	Median	Q3	Maximum
0	8	14.5	33	51



8. Create a reasonable display for the following data. Then, provide a backup display (describe it only ... you do not have to create a second display).

Activity	Frequency
Summer Camp	30
Babysitting	50
Pool Membership	130
Cutting Grass	25
Summer School	10



9. Complete the frequency table based on the given information. Then, create a relative frequency table and to answer the questions below.

Transport JOB \	Walk	Car	Bus	Bike	Total
Male	34	28	15	52	129
Female	46	17	12	17	92
Total	80	45	27	69	221

Transport JOB \	Walk	Car	Bus	Bike	Total
Male	.154	.1267	.678	.235	.58371
Female	.208	.769	.543	.769	.416
Total	.3619	.2036	.122	.312	1

- a. What percentage of the survey took the bus?

12.2%

- b. What percentage of the survey were males who rode their bikes?

23.5%

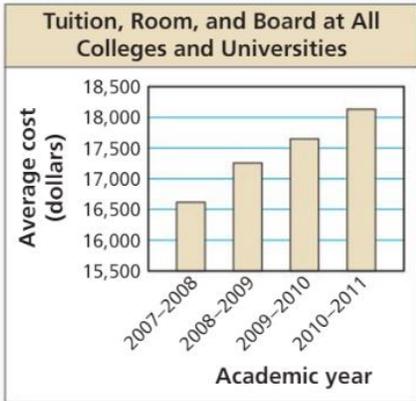
- c. What percentage of the girls walked?

50%

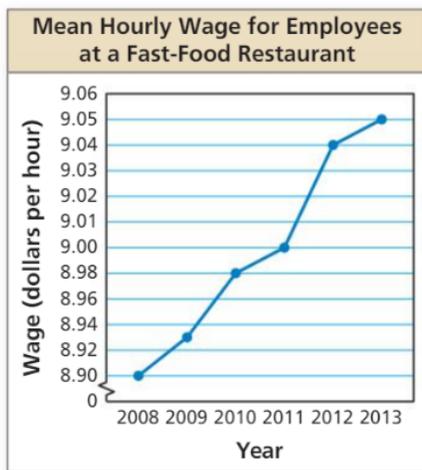
- d. What percent of the boys rode their bikes?

40.3%

10. Describe how each graph is misleading. Then, explain how someone might misinterpret the graph. Who might the misleading graph benefit?



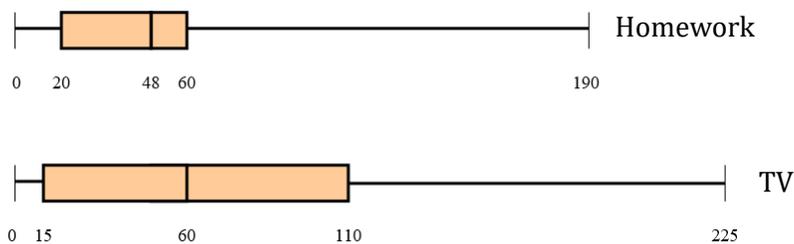
The graph's y-axis needs to start @ 0. Because of this it looks like the tuition doubled from 07-08 to 10-11.



Again, it looks like a huge increase in salary but really it is quite a small.

A boss would use this to show how he has already fairly compensated his employees.

11. The double box-and-whisker plot below represents the amount of time (in minutes) students spend per night completing homework and/or watching TV.



TV med: 60  
hw med: 48

- How much wider is the TV time's IQR than the Homework's? What about the median?  
 $TV = 110 - 15 = 95$      $hw = 60 - 20 = 40$     } TV IQR is 55 more. (12)
- True or False: Students on average spend more time watching TV every night than watching homework. Explain! TRUE 50% of students spend 15-110 min on TV and 50% of students spend 20-60 min on hw.
- True or False: There is at least one student that spends more time watching TV every night than any other student spends completing homework. Explain! TRUE, there is at least 1 kid who spends 225 min. on TV, but the most anybody spends on hw is 190 min.