Key

UNIT 10:
STATISTICS STUDY GUIDE

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

categories

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

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

QL Pie Chart

QN Histogram

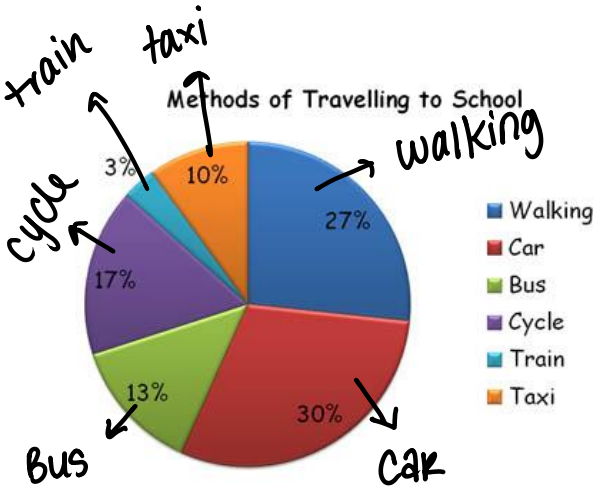
QN Stem-and-Leaf

QN/QL Dot Plot

QN Box-and-Whisker

QL Two-Way Frequency Table

3. The pie chart below represents the various methods of transportation that CPS 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 x 1.5 = 45

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

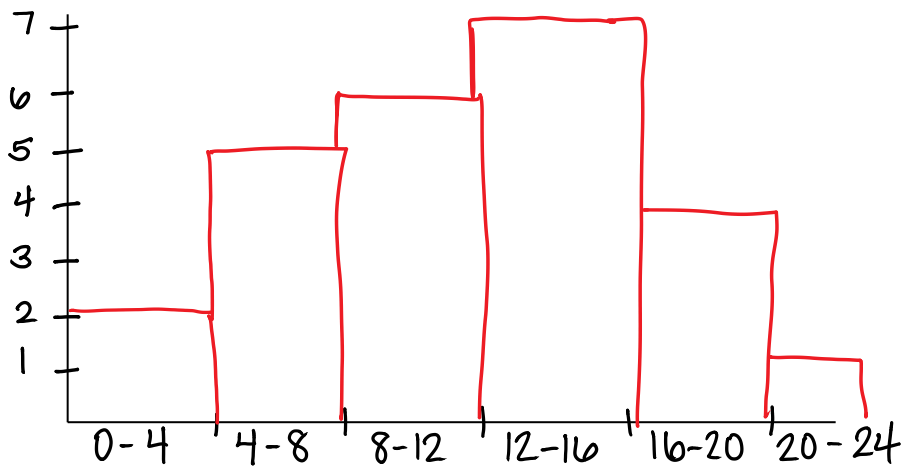
False

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.

16 7 11 14 2 1 0 5 12 3 10 4 12 1 15 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
8321	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

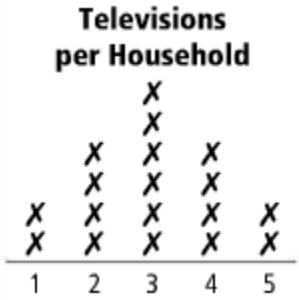
6. The results of a survey on the number of televisions in students' households are shown in the dot plot below.

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	9	2	33	51	40

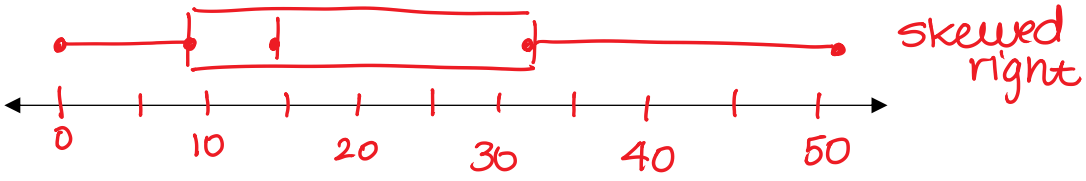
Are there any outliers? Justify your answer with numerical evidence.

NO outliers b/c −29.5 − 70.5

0 2 3 8 9 11 14 | 15 17 25 33 35 40 51

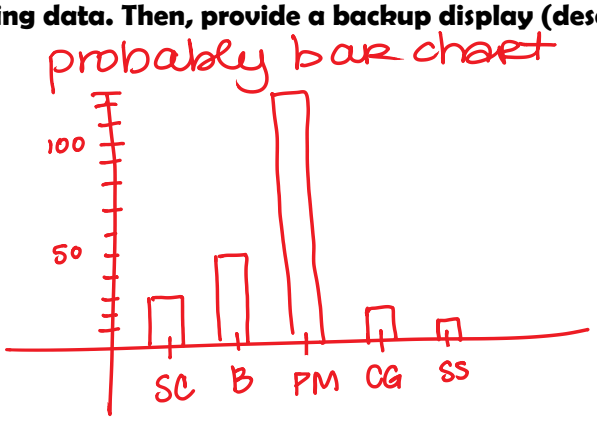
Q1 = 8, 14.5, Q3 = 33

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	.618	.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%

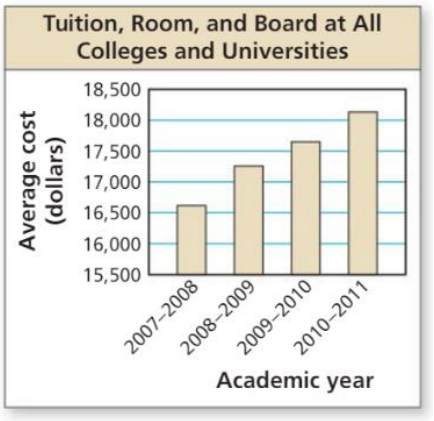
c. What percentage of the girls walked?

50%

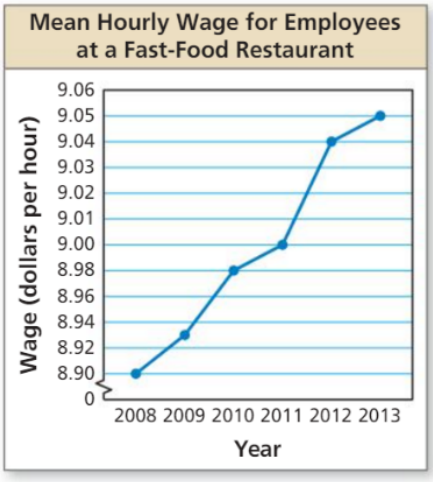
d. What percent of the boys rode their bikes?

40.3%

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



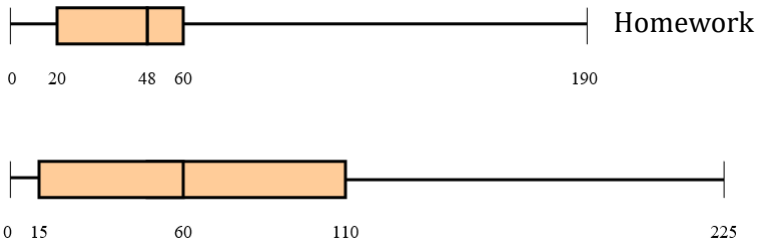
The graph's y-axis needs to start @ 0. Because of this it looks like the tuition doubled from 07-08 to 10-11.



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
12

a. 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.

b. *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.

c. *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 anbody spends on hw is 190 min.