

Exam 1 Review

Covers Sections: 1.1 – 1.3, 2.1 – 2.5

While every effort has been made to ensure the accuracy of the questions and solutions below, mistakes do sometimes occur. If you discover an error please let me know, either in class, or by email to jreitz@citytech.cuny.edu.

- For each of the following, determine if it represents a population or a sample.
 - Number of personal fouls committed by all NBA players during the 2005–2006 season
 - Yield of potatoes per acre for 10 pieces of land
 - Weekly salaries of all employees of a company
 - Cattle owned by 100 farmers in Iowa
 - Number of computers sold during the past week at all computer stores in Los Angeles
- For each of the following variables, determine if it is qualitative or quantitative.
 - Number of typographical errors in newspapers
 - Monthly TV cable bills
 - Spring break locations favored by college students
 - Number of cars owned by families
 - Lottery revenues of states
- The following data give the results of a sample survey. The letters A, B and C represent the three categories.
A B B C B C B A B C
B B C B A B B C B B
 - Prepare a frequency distribution table.
 - Calculate the relative frequencies and percentages for all categories.
 - What percentage of the elements in this sample belong to category B?
 - What percentage of the elements in this sample belong to category A or C?
 - Draw a histogram for the frequency distribution.
- In its November 29, 2004 issue, Business Week magazine presented data on charitable contributions by S&P 500 companies during the 2003 fiscal year. The following table lists the cash contributions (in millions of dollars) of the top 15 companies from this list based on the cash gifts as percentage of their revenues.

Company	Cash Contributions During 2003 (millions)
Freeport-McMoRan	21.7
Corning	29.0
Avon Products	49.3
Newmont Mining	22.8
Computer Associates	15.3
General Mills	49.3
Fifth Third Bancorp	30.0
M & T Bank	13.7

Eli Lilly & Co.	51.1
Medtronic	31.0
Northern Trust	9.5
Janus Capital Group	3.3
Guidant	12.1
KeyCorp	18.6
Sallie Mae	14.1

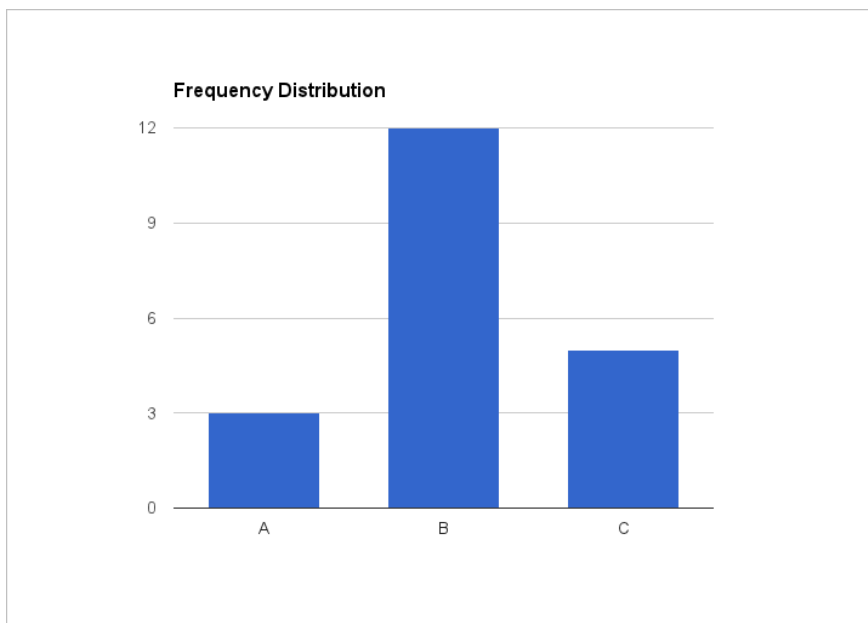
- Construct a frequency distribution table. Take the classes as 2—11.9, 12—21.9, etc.
 - Calculate the relative frequencies and percentages for all classes.
 - What percentage of companies received between 2 and 11.9 million dollars in cash contributions?
 - What percentage of companies received less than 32 million?
 - Draw a histogram.
5. The following data gives the number of reported crashes between bicycles and motor vehicles in Brooklyn during the period Oct - Dec 2011 (by precinct).
- | | | | | | | | | | | | |
|----|----|----|----|----|----|---|----|----|----|----|----|
| 10 | 19 | 12 | 7 | 18 | 16 | 3 | 5 | 15 | 7 | 20 | |
| 7 | 12 | 6 | 16 | 7 | 16 | 5 | 21 | 5 | 24 | 23 | 11 |
- Construct a frequency distribution table, using 4 classes (find the class width, and the upper and lower limits for each class).
 - Compute the cumulative frequency for each class.
 - Draw a histogram showing the cumulative frequency for each class (an “ogive”) . Label the x-axis with the midpoint of each class.
6. The following data gives weekly salary (in dollars) for all 6 students in local college class.
- | | | | | | |
|-----|-----|-----|-----|-----|----|
| 220 | 340 | 112 | 750 | 425 | 86 |
|-----|-----|-----|-----|-----|----|
- Find the mean, median and mode.
 - Find the range, variance and standard deviation.
7. The following data gives the speeds (in miles per hour) of a sample of 11 randomly selected cars that were stopped for speeding in Manhattan.
- | | | | | | | | | | | |
|----|----|----|----|----|----|----|----|----|----|----|
| 42 | 35 | 50 | 42 | 61 | 32 | 40 | 39 | 44 | 78 | 55 |
|----|----|----|----|----|----|----|----|----|----|----|
- Find the mean, median and mode.
 - Find the range, variance and standard deviation.
 - Find the minimum and maximum entries.
 - Find the quartiles Q1, Q2 and Q3.
 - Find the interquartile range (IQR).
 - Draw a box-and-whisker plot of the data.
8. The mean score on a Statistics exam was 82, with a standard deviation of 6. Find the standard score (z-score) for each of the students below.
- Alice’s score was 94.
 - Bob’s score was 76.
 - Charlie’s score was 98.

Answer Key

1. a. population b. sample c. population d. sample e. population
2. a. quantitative b. quantitative c. qualitative d. quantitative e. quantitative
3. a and b:

	FREQUENCY	RELATIVE FREQUENCY	PERCENTAGE
A	3	0.15	15
B	12	0.6	60
C	5	0.25	25

- c. 60% d. 40%
- e.

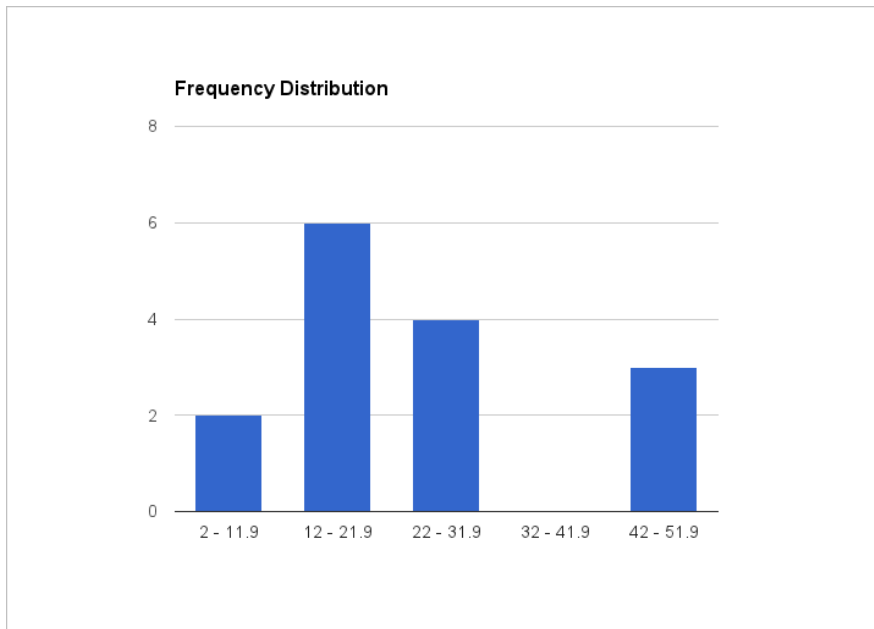


4. a and b:

	FREQUENCY	RELATIVE FREQUENCY	PERCENTAGE
2 - 11.9	2	0.13	13
12 - 21.9	6	0.40	40
22 - 31.9	4	0.27	27
32 - 41.9	0	0.00	0

42 - 51.9	3	0.20	20
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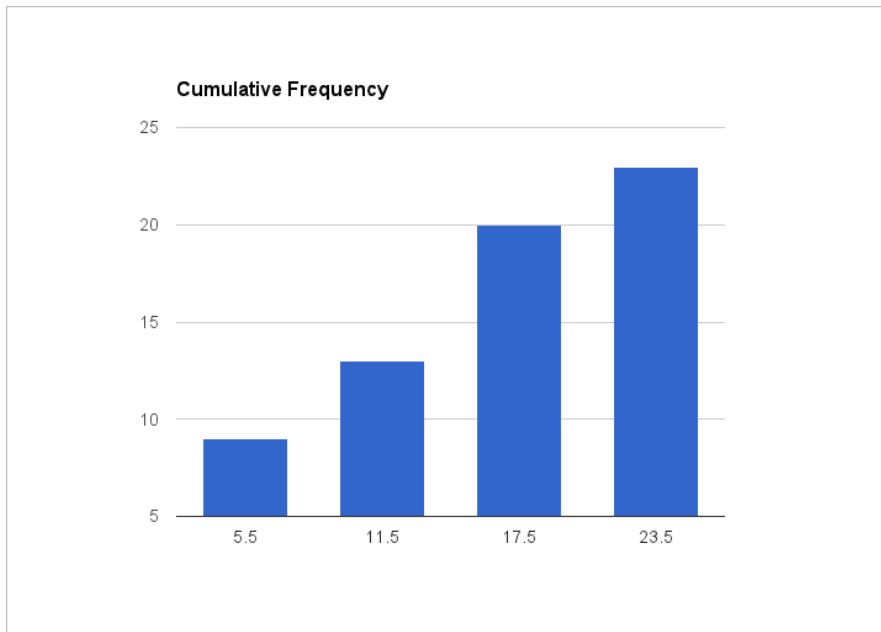
c. 13% d. 80%
e.



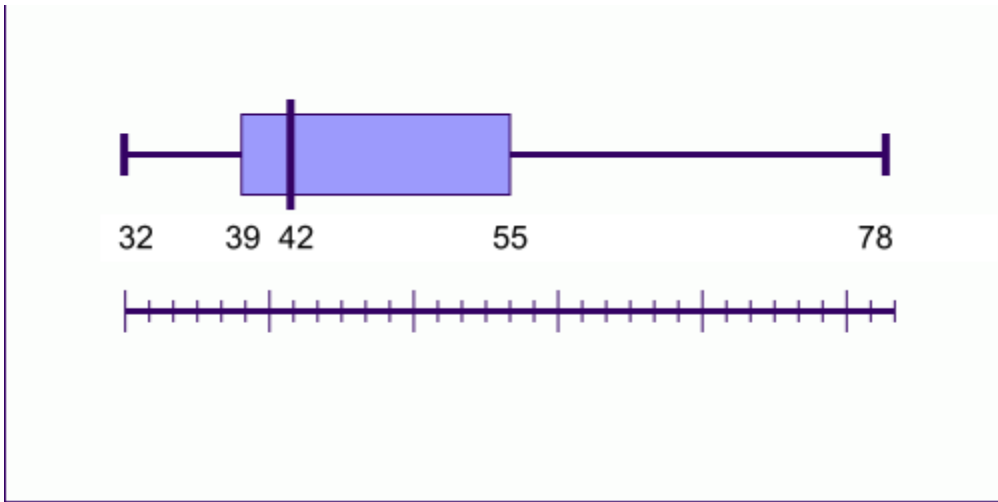
5. a and b: Class width = 6.

CLASS	FREQUENCY	CUMULATIVE FREQUENCY
3-8	9	9
9-14	4	13
15-20	7	20
21-26	3	23

c.



6. a. mean = 322.17, median = 280, there is no mode
b. range = 664, variance = 50719.47, standard deviation = 225.21
7. a. mean = 47.09, median = 42, mode = 42
b. range = 46, variance = 177.09, standard deviation = 13.31
c. minimum = 32, maximum = 78
d. Q1 = 39, Q2 = 42, Q3 = 55
e. IQR = 16
f.



8. a. $z=2$ b. $z=-1$ c. $z=2.67$