Math 116 – Chapter 2 review Name_____

Provide an appropriate response.

1) Suppose that a data set has a minimum value of 28 and a max of 73 and that you want 5 classes. Explain how to find the class width for this frequency table. What happens if you mistakenly use a class width of 9 instead of 10? 1) _____

2) Histograms and Pareto charts are both bar charts. What is the significant difference between the two? 2) _____

3) Without calculating the standard deviation, compare the standard deviation for the following data sets. (Note: All data sets have a mean of 30.) Which do you expect to have the largest standard deviation and which do you expect to have the smallest standard deviation? Explain your answers in terms of the formula $s = \sqrt{\frac{\sum(x - \bar{x})^2}{n - 1}}$. (This is formula 2–4.) 3) _____

30, 30, 30, 30, 30, 30, 30, 30, 30, 30
20, 25, 25, 30, 30, 30, 30, 35, 35, 40
20, 20, 20, 25, 25, 35, 35, 40, 40, 40

4) The textbook defines **unusual** values as those data points with z scores less than z = –2.00 or z scores greater than z = 2.00. Comment on this definition with respect to "the Empirical Rule"; refer specifically to the percent of scores which would be defined as **unusual** according to "the Empirical Rule". 4) _____

5) Marla scored 85% on her last unit exam in her statistics class. When Marla took the SAT exam, she scored at the 85 percentile in mathematics. Explain the difference in these two scores. 5) _____

Solve the problem.

6) The following frequency distribution analyzes the scores on a math test. Find the indicated class midpoint or boundaries. 6) _____

Scores	Number of students
40–59	2
60–75	4
76–82	6
83–94	15
95–99	5

The class boundaries of scores interval 40–59

7) The frequency table below shows the distribution of students' scores on an exam. Construct the relative frequency table. 7) _____

Scores	Frequency
91–100	6
81–90	5
71–80	14
61–70	5
<61	4

Construct the cumulative frequency table that corresponds to the given frequency table.

8) A professional tennis player hit one hundred balls and their speeds were recorded. 8) _____

Speed	Number of balls
0 – 29	4
30 – 59	16
60 – 89	60
90 – 120	20

Find the cumulative frequency distribution.

Use the given data to construct a frequency table.

9) A medical research team studied the ages of patients who had strokes caused by stress. The ages of 34 patients who suffered stress strokes were as follows. 9) _____

29 30 36 41 45 50 57 61 28 50 36 58
60 38 36 47 40 32 58 46 61 40 55 32
61 56 45 46 62 36 38 40 50 27

Construct a frequency table for these ages. Use 8 classes beginning with a lower class limit of 25.

Age	Frequency

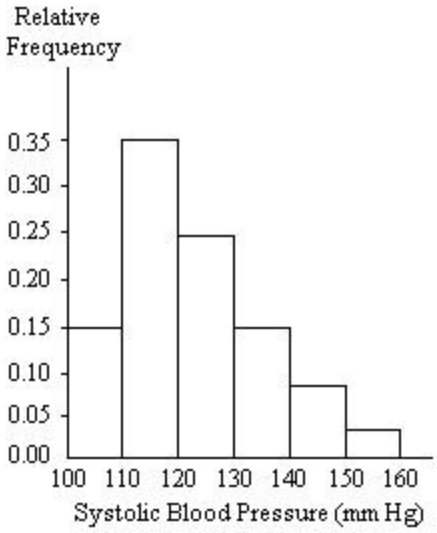
Provide an appropriate response.

10) Alan rolls a balanced die 100 times and records the number rolled. Which of the frequency tables below do you think is more plausible for the numbers obtained? Explain your thinking. 10) _____

Number	Frequency
1	14
2	19
3	16
4	21
5	13
6	17

Number	Frequency
1	4
2	12
3	27
4	42
5	13
6	2

A nurse measured the blood pressure of each person who visited her clinic. Following is a relative–frequency histogram for the systolic blood pressure readings for those people aged between 25 and 40. Use the histogram to answer the question. The blood pressure readings were given to the nearest whole number.



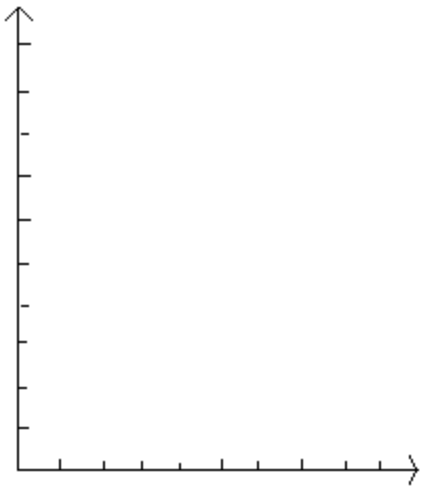
11) Approximately what percentage of the people aged 25–40 had a systolic blood pressure reading between 110 and 119 inclusive? 11) _____

Construct the specified histogram.

12) The frequency table below shows the number of days off in a given year for 30 police detectives. 12) _____

Days off	Frequency
0 – 1	10
2 – 3	1
4 – 5	7
6 – 7	7
8 – 9	1
10 or more	4

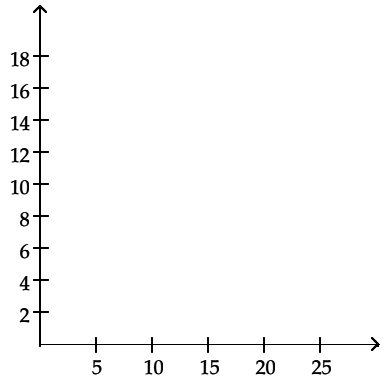
Construct a histogram.



Construct a frequency polygon for the given frequency table.

13) The frequency table below shows the weights of 47 cats. 13)

Weight (lb)	Frequency
5–7	2
8–10	9
11–13	18
14–16	13
17–19	4
20–22	1



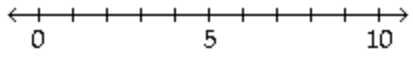
Find the original data from the stem–and–leaf plot.

14) 14) _____

Stem	Leaves
7.4	1 8
7.5	8 9
7.6	1 9 9

Construct the dot plot for the given data.

15) Attendance records at a school show the number of days each student was absent during the year. The days absent for each student were as follows.
0, 9, 2, 4, 3, 6, 8, 7, 2, 4, 2, 3, 3, 4, 6 15) _____



Use the data to plot a stem–and–leaf diagram.

16) The following data show the number of laps run by each participant in a marathon. 16) _____
46 65 55 43 51 48 57 30 43 49 32 56

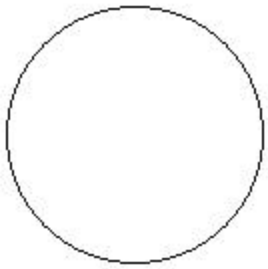
Solve the problem.

17) 240 casino patrons, were interviewed as they left the casino. 72 of them said they spent most of the time playing the slots. 72 of them said they played blackjack. 36 said they played craps. 12 said roulette. 12 said poker. The rest were not sure what they played the most. Construct a Pareto chart to depict the gaming practices of the group of casino goers. Choose the vertical scale so that the relative frequencies are represented. 17) _____

Construct a pie chart representing the given data set.

18) The following data give the distribution of the types of houses in a town containing 43,000 houses. 18) _____

Capes	Garrisons	Splits
10,750	15,050	17,200



Find the mean for the given sample data.

19) 14, 12, 20, 14, 12 19) _____

Find the median for the given sample data.

20) 10, 15, 18, 21, 30, 30, 49 20) _____
Find the median for the data.

21) The salaries of ten randomly selected doctors are shown below. 21) _____
$117,000 $120,000 $190,000 $234,000 $228,000
$142,000 $122,000 $760,000 $219,000 $166,000
Find the median salary.

Find the mode(s) for the given sample data.

22) –20, –30, –46, –30, –49, –30, –49 22) _____

Find the midrange for the given sample data.

23) 49 52 52 52 74 67 55 55 23) _____

Find the mean of the data summarized in the given frequency table.

24) A company had 80 employees whose salaries are summarized in the frequency table below. Find the mean salary. 24) _____

Salary ($)	Employees
5,001–10,000	20
10,001–15,000	13
15,001–20,000	13
20,001–25,000	12
25,001–30,000	22

Solve the problem.

25) Elaine gets quiz grades of 81, 67, and 76. She gets a 65 on her final exam. Find the weighted mean if the quizzes each count for 15% and the final exam counts for 55% of the final grade. 25) _____

Find the range for the given data.

26) Jeanne is currently taking college economics. The instructor often gives quizzes. On the past five quizzes, Jeanne got the following scores:
7 19 4 13 10
Compute the range. 26) _____

Find the variance for the given data. Round your answer to one more decimal place than the original data.

27) 15, 4, 12, 18, and 1 27) _____

Find the standard deviation for the given data. Round your answer to one more decimal place than the original data.

28) Christine is currently taking college astronomy. The instructor often gives quizzes. On the past seven quizzes, Christine got the following scores:
52 20 126 24 20 55 55
Compute the standard deviation s. 28) _____

Find the standard deviation of the data summarized in the given frequency table.

29) A company had 80 employees whose salaries are summarized in the frequency table below. Find the standard deviation. 29) _____

Salary	Employees
5,001 – 10,000	16
10,001 – 15,000	16
15,001 – 20,000	12
20,001 – 25,000	10
25,001 – 30,000	26

Solve the problem.

30) The heights in feet of people who work in an office are as follows. Use the range rule of thumb to find the standard deviation. Round results to the nearest tenth.
5.9 5.7 5.5 5.4 5.7 5.5 5.6 6.2 6.1 5.5 30) _____

31) The ages of the members of a gym have a mean of 40 years and a standard deviation of 14. Use the range rule of thumb to estimate the minimum and maximum "usual" ages. 31) _____

Use the empirical rule to solve the problem.

32) The systolic blood pressure of 18–year–old women is normally distributed with a mean of 120 mmHg and a standard deviation of 12 mmHg. What percentage of 18–year–old women have a systolic blood pressure between 96 mmHg and 144 mmHg? 32) _____

Solve the problem.

33) The heights of the adults in one town have a mean of 67.3 inches and a standard deviation of 3.4 inches. What can you conclude from Chebyshev's theorem about the percentage of adults in the town whose heights are between 60.5 and 74.1 inches? 33) _____

Solve the problem. Round results to the nearest hundredth.

34) A department store, on average, has daily sales of $28,072.20. The standard deviation of sales is $1000. On Tuesday, the store sold $35,537.77 worth of goods. Find Tuesday's z score. Was Tuesday an unusually good day? 34) _____

Determine which score corresponds to the higher relative position.

35) Which is better, a score of 92 on a test with a mean of 71 and a standard deviation of 15, or a score of 688 on a test with a mean of 493 and a standard deviation of 150? 35) _____

Find the percentile for the data point.

36) Data set: 59 33 43 61 72 61 44;
data point 59 36) _____

Find the indicated percentile, decile, or quartile.

37) Use the given sample data to find Q_3.
49 52 52 52 74 67 55 55 37) _____

38) The weights (in pounds) of 30 newborn babies are listed below. Find P_{16}. 38) _____
5.5 5.7 5.8 5.9 6.1 6.1 6.4 6.4 6.5 6.6
6.7 6.7 6.7 6.9 7.0 7.0 7.0 7.1 7.2 7.2
7.4 7.5 7.7 7.7 7.8 8.0 8.1 8.1 8.3 8.7

Solve the problem.

39) For data which are heavily skewed to the right, P_{10} is likely to be closer to the median than P_{90}. True or false? 39) _____

40) Human body temperatures have a mean of 98.20° F and a standard deviation of 0.62°. Sally's temperature can be described by z = 2.3. What is her temperature? Round your answer to the nearest hundredth. 40) _____

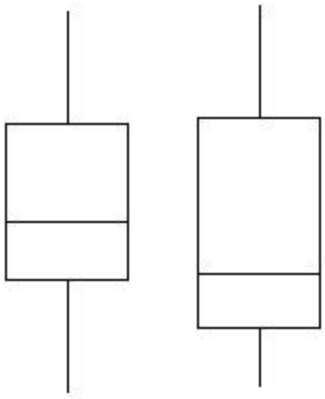
Construct a boxplot for the given data. Include values of the 5–number summary in all boxplots.

41) Construct a boxplot for the data given in the stem–and–leaf plot. 41) _____

4	3 6 9
5	1 2 2 5 8
6	5 6 6 6 7 7 7 9
7	1 3 5 7 9
8	3 5 6 7

Provide an appropriate response.

42) Describe any similarities or differences in the two distributions represented by the following boxplots. Assume the two boxplots have the same scale. 42) _____



Construct a modified boxplot for the data.

43) The weights (in ounces) of 27 tomatoes are listed below. Construct a modified boxplot for the data. 43) _____

1.7	2.0	2.2	2.2	2.4	2.5	2.5	2.5	2.6
2.6	2.6	2.7	2.7	2.7	2.8	2.8	2.8	2.9
2.9	2.9	3.0	3.0	3.1	3.1	3.3	3.6	4.2

1) Answers will vary.
2) Answers will vary.
3) Answers will vary.
4) Answers will vary.
5) Answers will vary.
6) 39.5, 59.5
7)

Scores	Relative Frequency
91–100	17.65%
81–90	14.71%
71–80	41.18%
61–70	14.71%
<61	11.76%

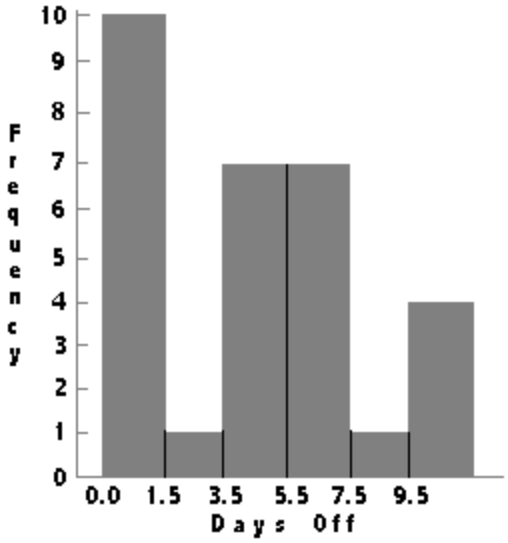
8)

Speed	Cumulative Frequency
0 – 29	4
30 – 59	20
60 – 89	80
90 – 120	100

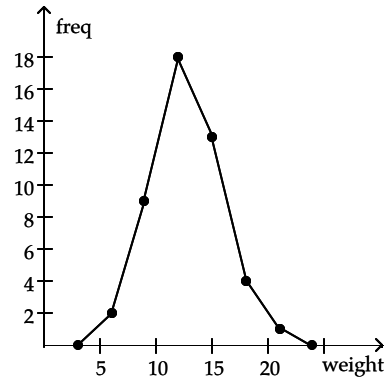
9)

Age	Frequency
25 – 29	3
30 – 34	3
35 – 39	6
40 – 44	4
45 – 49	5
50 – 54	3
55 – 59	5
60 – 64	5

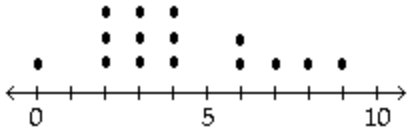
10) The first frequency table is more plausible. Because each number is equally likely to be rolled, a uniform distribution is expected. This first table has approximately the same frequency for each number.
11) 35%
12)



13)



14) 7.41, 7.48, 7.58, 7.59, 7.61, 7.69, 7.69

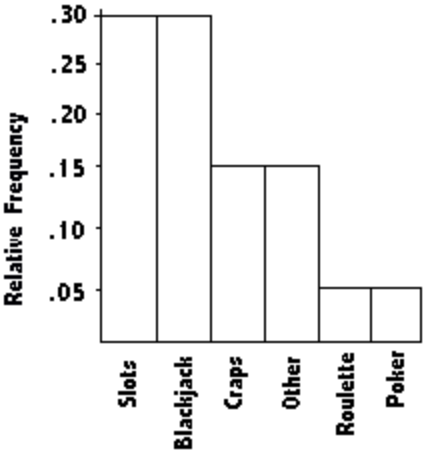


15)

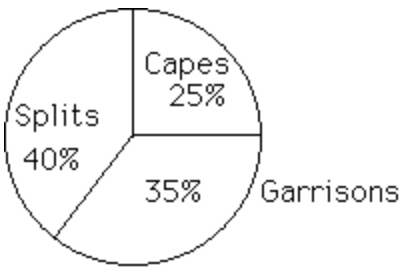
16)

3	0 2
4	3 3 6 8 9
5	1 5 6 7
6	5

17)



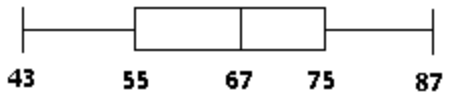
18)



19) 14.4

20) 21

21) $178,000
22) –30
23) 61.5
24) $17,688.00
25) 69.4
26) 15
27) 52.5
28) 37.2
29) s = 7785.7
30) 0.2
31) 12 years, 68 years
32) 95.44%
33) The percentage is at least 75%
34) 7.47, yes
35) A score of 92
36) 43
37) 61.0
38) 6.1
39) True
40) 99.63°F
41)



42) Answers will vary.
43)