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Chapter 2 Exam A

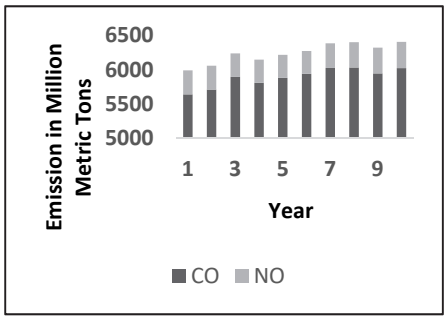
Name _____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

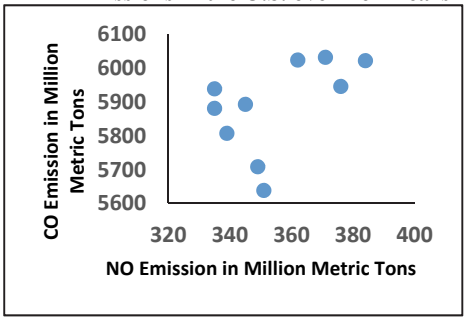
1) Which choice displays the best graphic display of the amount of nitrous oxide (NO) explained by the amount of carbon monoxide (CO) emissions in million metric tons over a ten year period in the United States? The data set is below: 1)_____

CO	5638	5708	5893	5807	5881	5939	6024	6032	5946	6022
NO	351	349	345	339	335	335	362	371	376	384

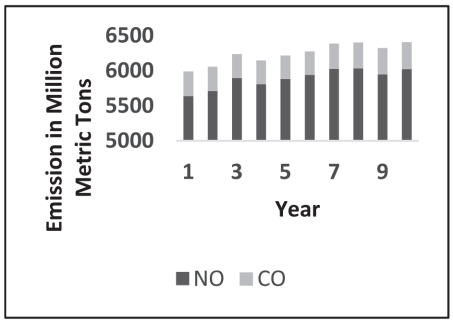
A) **Nitrous Oxide (NO) and Carbon Monoxide (CO) Emissions in the U.S. over Ten Years**



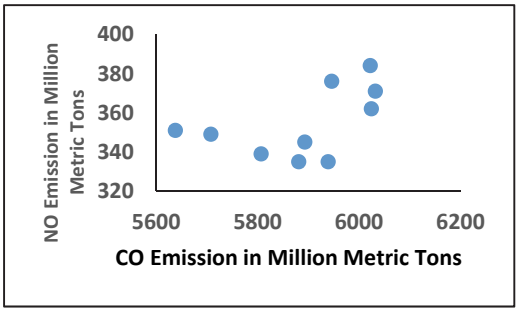
B) **Nitrous Oxide (NO) and Carbon Monoxide (CO) Emissions in the U.S. over Ten Years**



C) **Nitrous Oxide (NO) and Carbon Monoxide (CO) Emissions in the U.S. over Ten Years**



D) **Nitrous Oxide (NO) and Carbon Monoxide (CO) Emissions in the U.S. over Ten Years**



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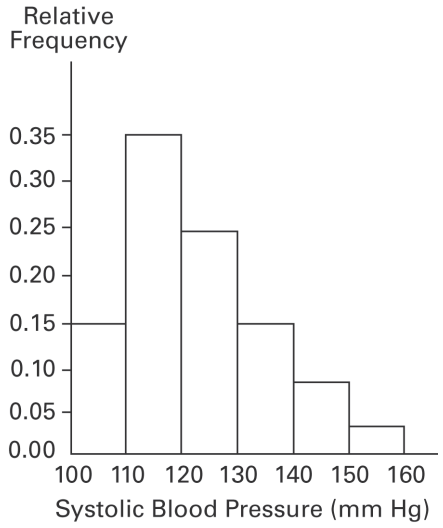
2) A nurse measured the blood pressure of each person who visited her clinic. Following is a relative-frequency histogram for the systolic blood pressure readings for those people aged between 25 and 40 years. The blood pressure readings were given to the nearest whole number. Approximately what percentage of the people aged 25-40 had a systolic blood pressure reading between 110 and 119 mm Hg inclusive? 2)_____

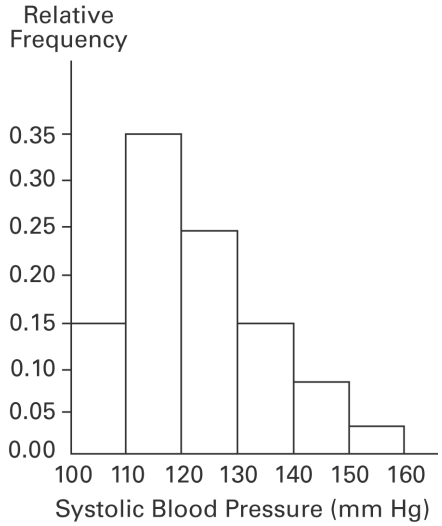
Systolic Blood Pressure for People Aged 25 – 40 Years



A) 0.35% B) 3.5% C) 30% D) 35%

3) 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 years. The blood pressure readings were given to the nearest whole number. Approximately what percentage of the people aged 25-40 had a systolic blood pressure reading between 110 and 139 mm Hg inclusive? 3)_____

Systolic Blood Pressure for People Aged 25 – 40 Years



A) 75% B) 89% C) 59% D) 39%

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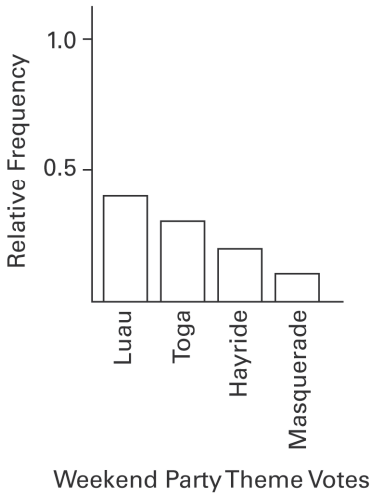
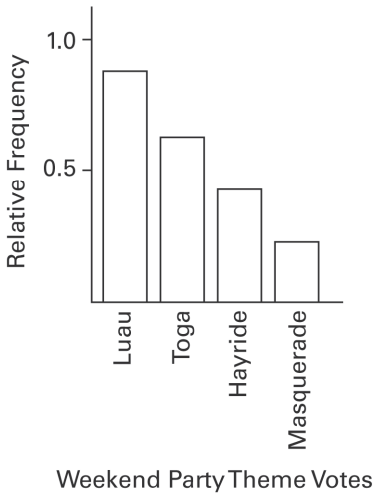
4) The Kappa Iota Sigma Fraternity polled its members on the weekend party theme. The vote was as follows: six for toga, four for hayride, eight for luau, and two for masquerade. Display the vote count in a Pareto chart. 4)_____

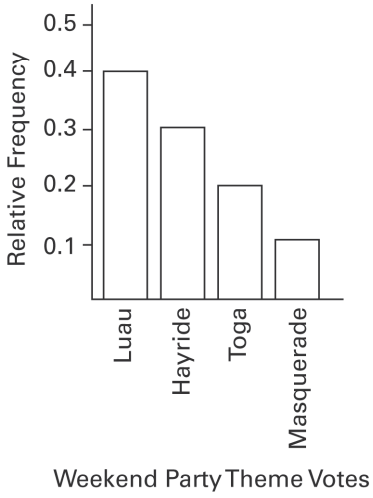
A)



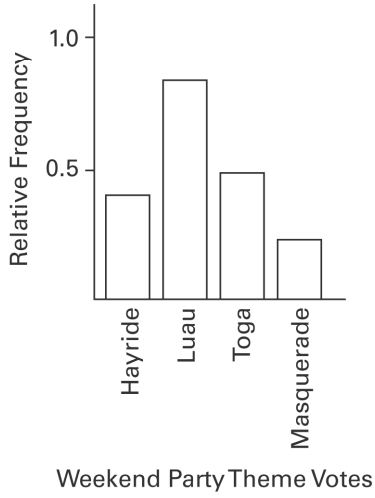
B)



C)



D)



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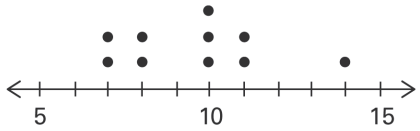
5) A store manager counts the number of customers who make a purchase in his store each day. The data are as follows. 5)_____

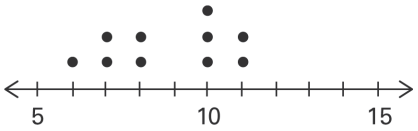
10 11 8 14 7 10 10 11 8 7

Which of these choices display the correct dotplot?

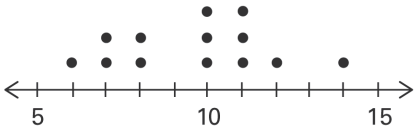
A) Number of Customers Per Day



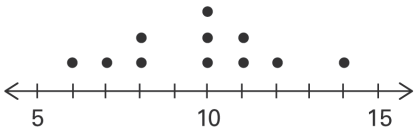
B) Number of Customers Per Day



C) Number of Customers Per Day



D) Number of Customers Per Day



6) The following data show the number of laps run by each participant in a marathon. 6)_____

46 65 55 43 51 48 57 30 43 49 32 56

Which of these choices display the correct stemplot?

A)

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

B)

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

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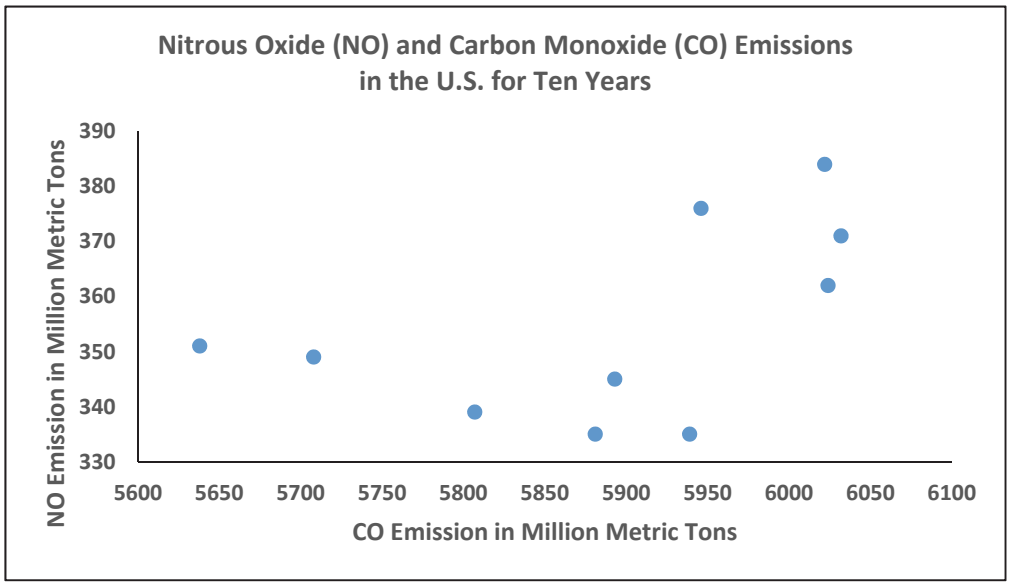
7) The scatterplot below displays the amount of nitrous oxide (NO) explained by the amount of carbon monoxide (CO) emissions in million metric tons over a ten year period in the United States. Select the choice that best describes any relationship between the variables. 7)_____



A) There is a negative linear association between NO and CO.
B) There is a positive linear association between NO and CO.
C) Overall, there is no noticeable relationship between NO and CO.
D) NO can be explained by CO.

8) Identify the cumulative frequency distribution that corresponds to the given frequency distribution. 8)_____

Speed	Number of Cars
0-29	4
30-59	16
60-89	60
90-119	20

A)

Speed	Cumulative Frequency
Less than 30	4
Less than 60	20
Less than 90	80
Less than 120	100

B)

Speed	Cumulative Frequency
Less than 30	0.04
Less than 60	0.20
Less than 90	0.80
Less than 120	1.00

C)

Speed	Cumulative Frequency
0-29	4
30-59	20
60-89	80
90-119	100

D)

Speed	Cumulative Frequency
Less than 30	100
Less than 60	80
Less than 90	82
Less than 120	4

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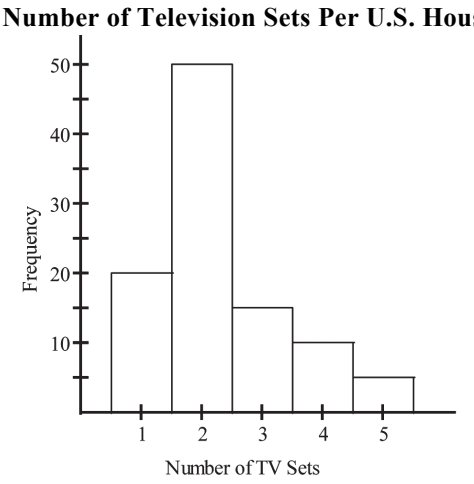
9) The following frequency distribution represents the scores on a math test. Find the class midpoint of scores for the interval 40-59. 9)_____

Scores	Number of students
50-59	2
60-69	4
70-79	6
80-89	15
90-99	5

A) 50.5 B) 48.5 C) 49.5 D) 49.0

10) The histogram below represents the number of television sets per household for a sample of U.S. households. What is the sample size? 10)_____



A) 100 households B) 5 households
C) 50 households D) 90 households

11)_____

11) The weights (in pounds) of 22 members of the junior varsity football team are listed below.

144 152 142 151 160 152 131 164 141 153 140
144 175 156 147 133 172 159 135 159 148 171

Which of these choices display the correct stemplot?

A)

13	1 3 5
14	0 1 2 4 4 7 8
15	1 2 2 3 6 9 9
16	0 4
17	1 2 5

B)

13	1 3 5
14	1 2 2 3 6 9 9
15	0 1 2 4 4 7 8
16	0 4
17	1 2 5

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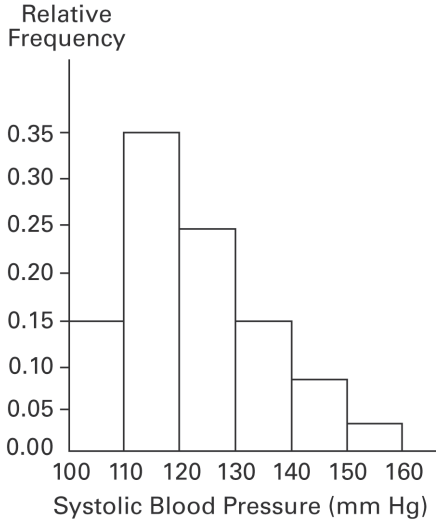
12) A nurse measured the blood pressure of each person who visited her clinic. Following is a relative-frequency histogram for the systolic blood pressure readings for those people aged between 25 and 40 years. The blood pressure readings (in mm Hg) were given to the nearest whole number. What class width was used to construct the relative frequency distribution? 12)_____

Systolic Blood Pressure for People Aged 25 – 40 Years



A) 11 years B) 9 years C) 10 years D) 100 years

13) The following frequency distribution analyzes the scores on a math test. Find the class boundaries of scores interval 90-99. 13)_____

Scores	Number of Students
50-59	2
60-69	4
70-79	6
80-89	15
90-99	5

A) 89.5, 100.5 B) 89.5, 100.5 C) 90.5, 99.5 D) 89.5, 99.5

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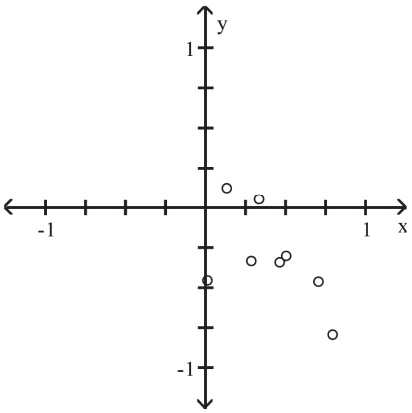
14) x 0.51 0.02 0.14 0.29 0.34 0.8 0.47 0.71
y 0.31 0.46 –0.12 0.34 –0.05 0.8 0.35 0.47

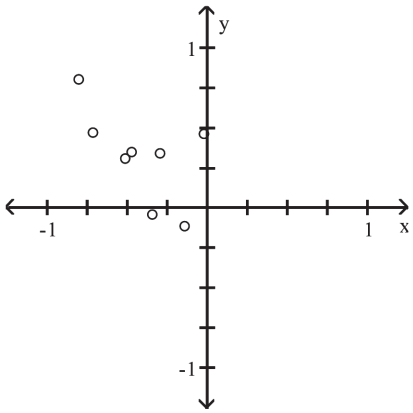
14)_____

Which of these choices display the correct scatterplot?

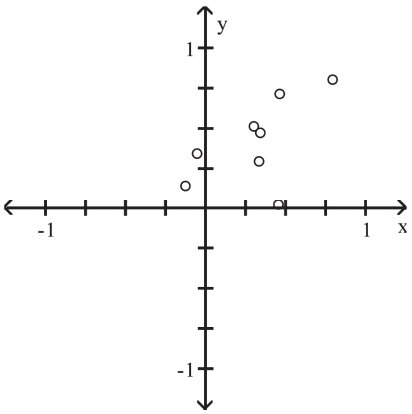
A)



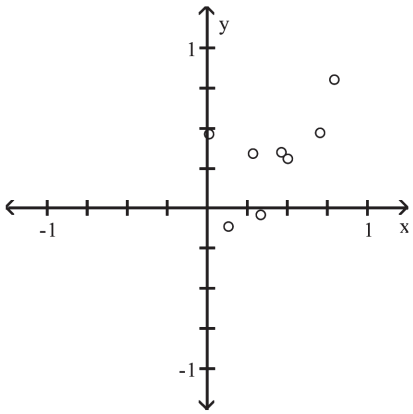
B)



C)



D)



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15) Which of the following cumulative frequency distribution corresponds to the given frequency distribution? 15)_____

Weight (oz)	Number of Stones
1.2-1.6	5
1.7-2.1	2
2.2-2.6	5
2.7-3.1	5
3.2-3.6	13

A)

Weight (oz)	Cumulative Frequency
1.2-1.6	5
1.7-2.1	7
2.2-2.6	12
2.7-3.1	17
3.2-3.6	30

B)

Weight (oz)	Cumulative Frequency
Less than 2.2	7
Less than 3.2	17
Less than 3.7	30

C)

Weight (oz)	Cumulative Frequency
Less than 1.7	5
Less than 2.2	7
Less than 2.7	12
Less than 3.2	17
Less than 3.7	30

D)

Weight (oz)	Cumulative Frequency
Less than 1.7	5
Less than 2.2	7
Less than 2.7	12
Less than 3.2	17
Less than 3.7	28

16) The attendance counts for this season's basketball games are listed below. Which of these choices display the correct stemplot? 16)_____

227 239 215 219
221 233 229 233
235 228 245 231

A)

21	5 9
22	1 7 8 9
23	1 3 3 5 9
24	5

B)

21	5 7 9
22	1 8 9
23	1 3 3 5 9
24	5

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17) The frequency distribution below summarizes employee years of service for Alpha Corporation. Find the class midpoint for class 1-5. 17)_____

Years of Service	Frequency
1-5	5
6-10	20
11-15	25
16-20	10
21-25	5
26-30	3

A) 3.5 years B) 3.0 years C) 5.0 years D) 2.5 years

18) The two key parts of a regression equation involve the _____ and the y-_____. 18)_____

A) slope; intercept
B) asymptote; intercept
C) slope; axis
D) asymptote; axis

19) Analysis of the data from 25 mothers indicates that an infant's birth weight (g), y, can be estimated by a mother's weight (kg), x, using the regression equation $y = 31x + 1501$. For every _____ kg increase in a mother's weight, the infant's birth weight increases by _____ g. 19)_____

A) 31; 1501 B) 1; 31 C) 31; 1 D) 1501; 31

20) Analysis of the data from 25 mothers indicates that an infant's birth weight (g), y, can be estimated by a mother's weight (kg), x, using the regression equation $y = 31x + 1501$. If a mother's weight is 70 kg, the infant's birth weight can be estimated as _____ g. 20)_____

A) 48,701 B) 1718 C) 46 D) 3671

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Answer Key
Testname: CHAPTER 2 EXAM A

1) D
2) D
3) A
4) A
5) A
6) A
7) C
8) A
9) C
10) A
11) A
12) C
13) D
14) D
15) C
16) A
17) B
18) A
19) B
20) D

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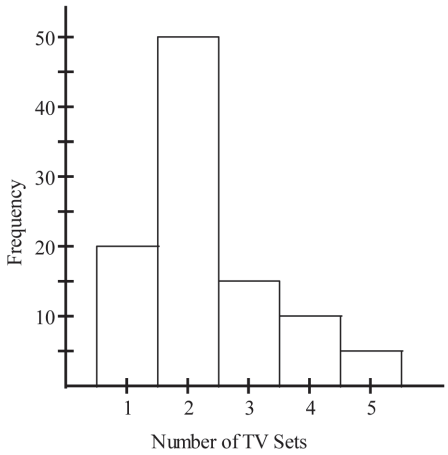
Chapter 2 Exam B

Name _____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

1) The histogram below represents the number of television sets per household for a sample of U.S. households. What is the sample size? 1)_____

Number of TV Sets Per U.S. Household



A) 5 B) 50 C) 90 D) 100

2) The following data consists of the weights (in pounds) of 15 randomly selected women and the weights of 15 randomly selected men. Which of these choices display the correct back-to-back stemplot? 2)_____

Women:	128	150	118	166	142
	122	137	110	175	152
	145	126	139	111	170
Men:	140	153	199	186	169
	136	176	162	196	155
	173	190	141	166	153

A)

Men		Women
	11	0 1 8
	12	2 6 8
6	13	7 9
1 0	14	2 5
5 3 3	15	0 2
9 6 2	16	6
6 3	17	0 5
6	18	
9 6 0	19	

B)

Men		Women
	11	0 1
	12	2 6 8
6	13	7 9
1 0	14	2 5
5 3 3	15	0 2 4
9 6 2	16	6
6 3	17	0 5
9 6	18	
9 6	19	

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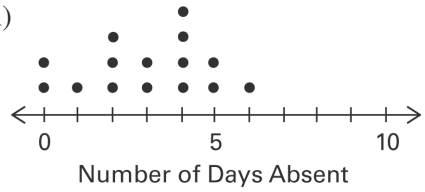
3) Attendance records at a school show the number of days each student was absent during the year. The days absent for each student were as follows. 3)_____

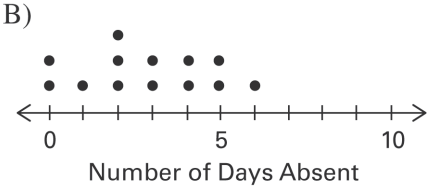
0 2 3 4 2 3 4 6 7 2 3 4 6 9 8

Which of these choices display the correct dotplot?

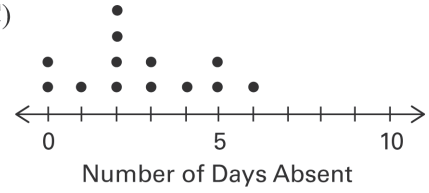
A)



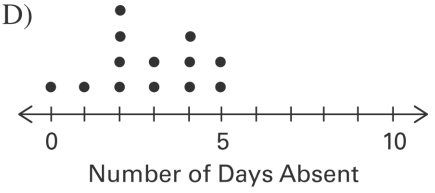
B)



C)



D)



4) According to *USA Today*, the largest categories of sports equipment sales are as follows: fishing ($2.0 billion); firearms and hunting ($3.1 billion); camping ($1.7 billion); golf ($2.5 billion). What type of graph would depict these different categories and their relative amounts the best? 4)_____

A) A pie chart B) A bar chart C) A column chart D) A Pareto chart

5) The frequency distribution below summarizes the home sale prices in the city of Summerhill for the month of June. Determine the width of each class. 5)_____

Sale Price (in thousand $)	Frequency
80.0 - 110.9	2
111.0 - 141.9	5
142.0 – 172.9	7
173.0 – 203.9	10
204.0 – 234.9	3
235.0 – 265.9	1

A) 61 B) 31 C) 28 D) 30

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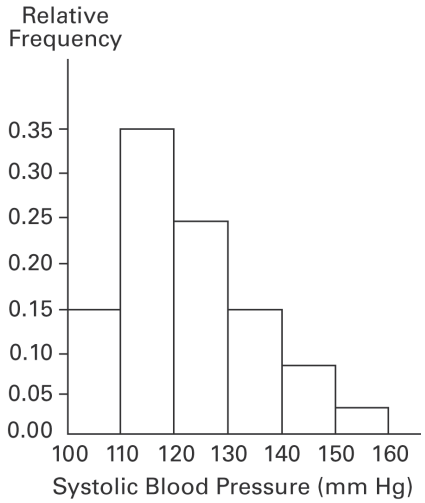
6) A nurse measured the blood pressure of each person who visited her clinic. Following is a relative-frequency histogram for the systolic blood pressure readings for those people aged between 25 and 40 years. The blood pressure readings were given to the nearest whole number. Approximately what percentage of the people aged 25-40 had a systolic blood pressure reading between 110 and 139 mm Hg inclusive? 6)_____

Systolic Blood Pressure for People Aged 25 – 40 Years



A) 59% B) 39% C) 89% D) 75%

7) The following frequency distribution depicts the scores on a math test. Find the class midpoint of scores for the interval 95-99. 7)_____

Scores	Number of Students
75-79	2
80-84	4
85-89	6
90-94	15
95-99	5

A) 97.5 B) 97.0 C) 96.5 D) 98.0

8) The ages of the 45 members of a track and field team are listed below. Which of these choices display the correct stemplot? 8)_____

21 18 42 35 32 21 44 25 38 48 14 19 23 22 28
32 34 27 31 17 16 41 37 22 24 33 32 21 26 30
22 27 32 30 20 18 17 21 15 26 36 31 40 16 25

A)

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

B)

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

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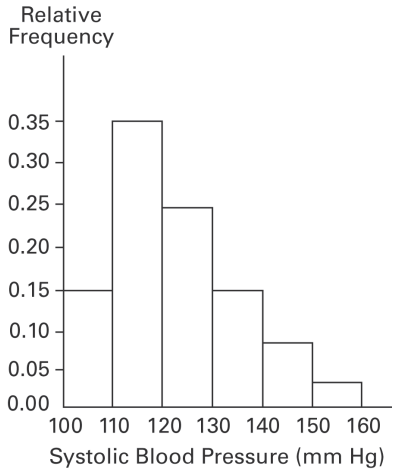
9) A nurse measured the blood pressure of each person who visited her clinic. Following is a relative-frequency histogram for the systolic blood pressure readings for those people aged between 25 and 40 years. The blood pressure readings were given to the nearest whole number. Approximately what percentage of the people aged 25-40 had a systolic blood pressure reading between 110 and 119 mm Hg inclusive? 9)_____

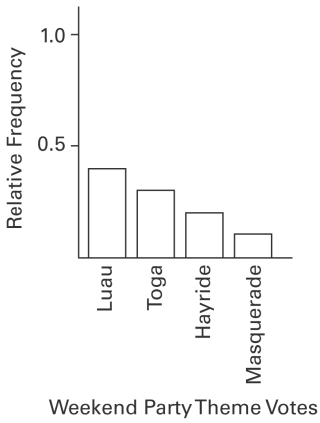
Systolic Blood Pressure for People Aged 25 – 40 Years



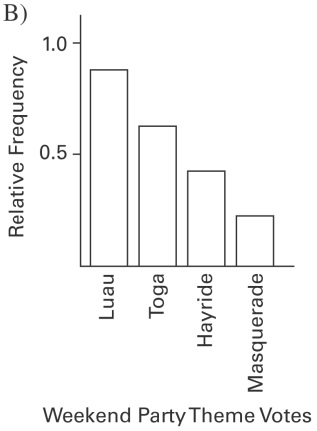
A) 35% B) 0.35% C) 3.5% D) 30%

10) The Kappa Iota Sigma Fraternity polled its members on the weekend party theme. The vote was as follows: six for toga, four for hayride, eight for luau, and two for masquerade. Which of these choices display the correct Pareto chart? 10)_____

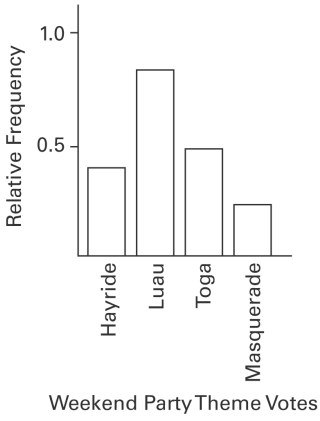
A)



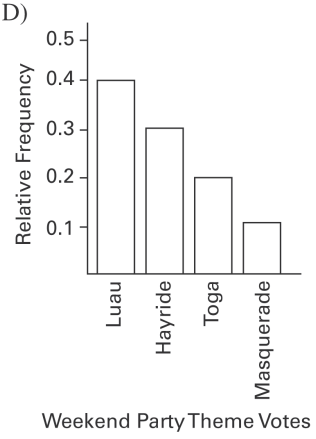
B)



C)



D)



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11) The following data show the number of laps run by each participant in a marathon. 11)_____

46 65 55 43 51 48 57 30 43 49 32 56

Which of these choices display the correct stemplot?

A)

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

B)

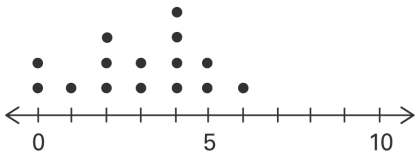
3	0 2
4	3 6 8 9
4	1 3 5 6 7
6	5

12) A manufacturer records the number of errors each work station makes during the week. The data are as follows. 12)_____

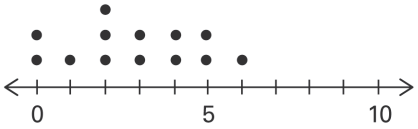
6 3 2 3 5 2 0 2 5 4 2 0 1

Which of these choices display the correct dotplot?

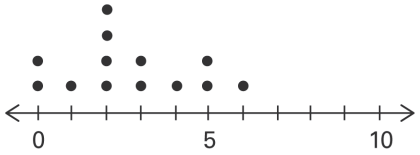
A) Number of Errors for the Week for Workstations



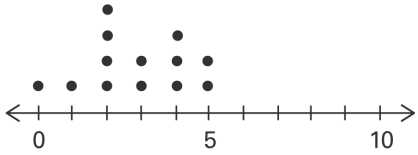
B) Number of Errors for the Week for Workstations



C) Number of Errors for the Week for Workstations



D) Number of Errors for the Week for Workstations



13) The following frequency distribution displays the scores on a math test. Find the class boundaries of scores interval 40-59. 13)_____

Scores	Number of Students
50-59	2
60-69	4
70-79	6
80-89	15
90-99	5

A) 49.5, 59.5 B) 50.5, 59.5 C) 49.5, 58.5 D) 50.5, 58.5

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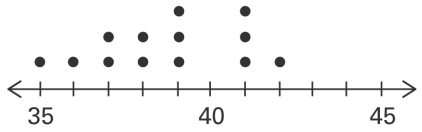
14) The following data represent the number of cars passing through a toll booth during a certain time period over a number of days. 14)_____

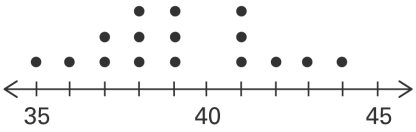
38 39 37 37 44 38 41 38 39 35 42 39 43 37 41

Which of these choices display the correct dotplot?

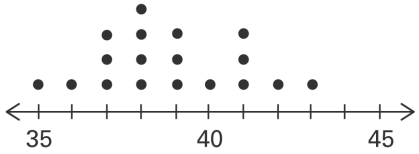
A) Number of Cars Passing Through a Toll Booth



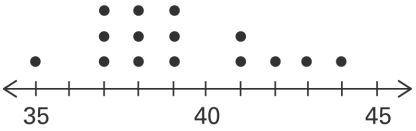
B) Number of Cars Passing Through a Toll Booth



C) Number of Cars Passing Through a Toll Booth



D) Number of Cars Passing Through a Toll Booth



15) The frequency distribution below summarizes employee years of service for Alpha Corporation. Determine the width of each class. 15)_____

Years of Service	Frequency
1-5	5
6-10	20
11-15	25
16-20	10
21-25	5
26-30	3

A) 5 years B) 6 years C) 4 years D) 10 years

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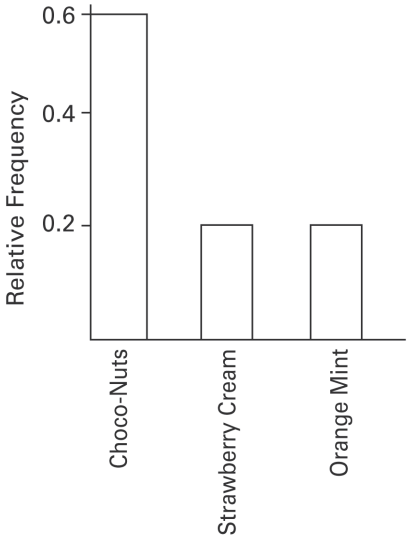
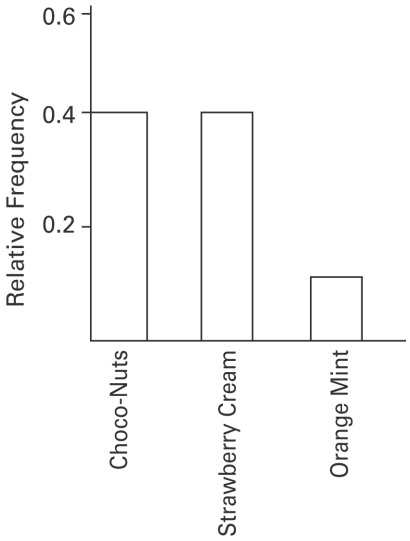
16) Wagenlucht Ice Cream Company is always trying to create new flavors of ice cream. They are market testing three kinds to find out which one has the best chance of becoming popular. They give small samples of each to 20 people at a grocery store. Four ice cream tasters preferred the Strawberry Cream, 12 preferred Choco-Nuts, and four loved the Orange Mint. Construct a Pareto chart to represent these preferences. Choose the vertical scale so that the relative frequencies are represented. 16)_____

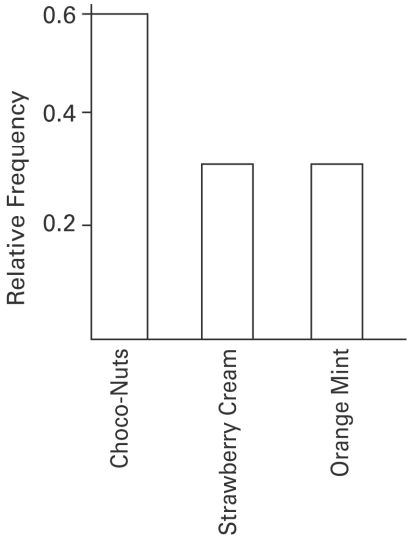
A) Ice Cream Preference



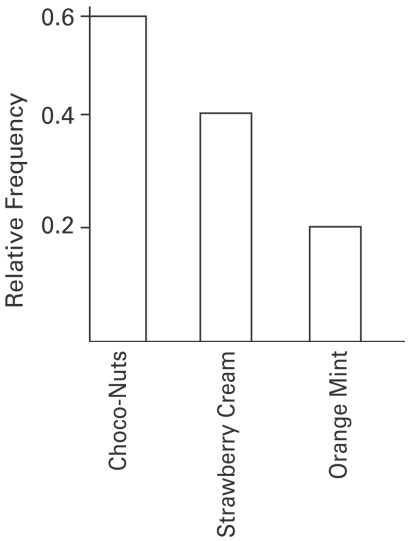
B) Ice Cream Preference



C) Ice Cream Preference



D) Ice Cream Preference



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17) The frequency distribution below summarizes the home sale prices in the city of Summerhill for the month of June. Determine the class midpoint (in thousand $) for the class 235.0 -265.9. 17)_____

Sale Price (in thousand $)	Frequency
80.0 - 110.9	2
111.0 - 141.9	5
142.0 - 172.9	7
173.0 - 203.9	10
204.0 - 234.9	3
235.0 - 265.9	1

A) 250.4 B) 250.55 C) 250.45 D) 250.5

18) Identify the cumulative frequency distribution that corresponds to the given frequency distribution. 18)_____

Speed	Number of Cars
0-29	4
30-59	16
60-89	60
90-119	20

A)

Speed	Cumulative Frequency
Less than 30	0.04
Less than 60	0.20
Less than 90	0.80
Less than 120	1.00

B)

Speed	Cumulative Frequency
Less than 30	4
Less than 60	20
Less than 90	80
Less than 120	100

C)

Speed	Cumulative Frequency
0-29	4
30-59	20
60-89	80
90-119	100

D)

Speed	Cumulative Frequency
Less than 30	100
Less than 60	80
Less than 90	82
Less than 120	4

19) The linear _____ coefficient denoted by *r* measures the _____ of the linear association between two variables. 19)_____

A) correlation; strength
B) probability; likelihood
C) exponential; exponent
D) squares; weakness

20) Smoking and the episodes of lung cancer have a high correlation, but it does not prove _____. 20)_____

A) causation B) correlation C) exponentiation D) a linear relationship

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Answer Key
Testname: CHAPTER 2 EXAM B

1) D
2) A
3) D
4) D
5) B
6) D
7) B
8) A
9) A
10) A
11) A
12) C
13) A
14) D
15) A
16) A
17) C
18) B
19) A
20) A

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Chapter 2 Exam C

Name _____

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

1) A bar chart and a Pareto chart both use bars to show frequencies of categories of categorical data. What characteristic distinguishes a Pareto chart from a bar chart and how does that characteristic help us in understanding the data? 1)_____

2) A school district performed a study to find the main causes leading to its students dropping out of school. Thirty cases were analyzed, and a primary cause was assigned to each case. The causes included unexcused absences (U), illness (I), family problems (F), and other causes (O). The results for the thirty cases are listed below: 2)_____

U U U I F O O U I F
F O U I I F I I O U
I F F U U I I O F U

Construct a table summarizing the frequency distribution of the primary causes leading to student dropout.

Cause	Frequency

3) Use the high closing values of Statstar Inc. stock from the years 2005-2016 to construct a time-series graph. (Let $x = 0$ represent 2005 and so on.) Identify a trend. 3)_____

Year	High	Year	High
2005	48	2011	62
2006	53	2012	60
2007	47	2013	68
2008	55	2014	42
2009	58	2015	51
2010	61	2016	78

4) Describe at least two advantages to using stemplots rather than frequency distributions. 4)_____

5) The following data set represents Heather's average monthly charges (in $) for cable TV for the past 24 months. 5)_____

105 125 110 98 102 115 110 123 118 101 95 128
110 105 122 107 118 107 117 125 116 110 101 107

Construct a frequency distribution with 4 classes, a class width of 2 hours, and a lower limit of 100 for class 1.

Charges $	Frequency

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6) The following figures represent Latisha's monthly charges (in $) for long distance telephone calls for the past twelve months. 6)_____

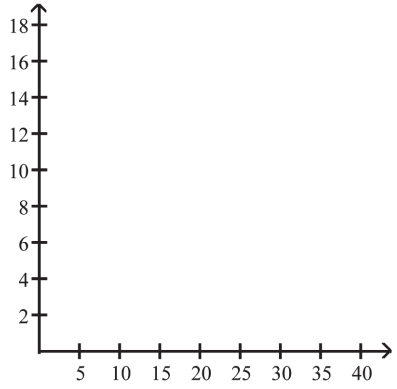
7.12	10.40	14.70	18.24
10.48	16.47	7.53	15.45
13.04	15.48	13.33	12.56

Construct a frequency distribution with four classes.

Charges $	Frequency

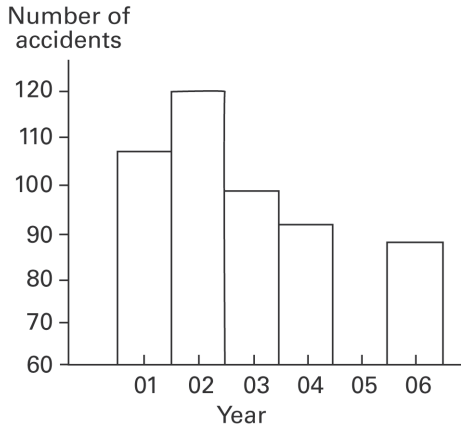
7) The data shows the roundtrip mileage that 43 randomly selected students drive to school each day. Construct a frequency polygon. Applying a loose interpretation of the requirements for a normal distribution, do the mileages appear to be normally distributed? Why or why not? 7)_____

Miles	Frequency
10-14	0
15-19	6
20-24	9
25-29	21
30-34	7



8) The graph below shows the number of car accidents occurring in one city in each of the years 2011 through 2016. The number of accidents dropped in 2013 after a new speed limit was imposed. Does the graph distort the data? How would you redesign the graph to be less misleading? 8)_____

Number of Car Accidents for 2011 - 2016



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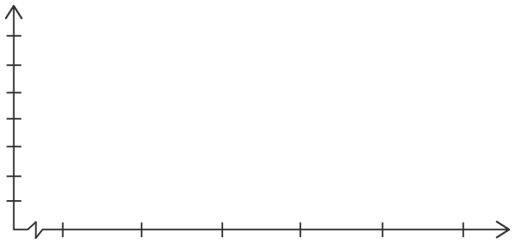
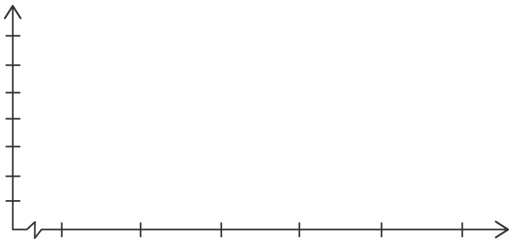
9) In a survey, 26 voters were asked their ages. The results are shown below. Construct a histogram to represent the data (with 5 classes beginning with a lower class limit of 19.5 and a class width of 10). What is the approximate age at the center? 9)_____

43	56	28	63	67	66	52	48	37	51	40	60	62
66	45	21	35	49	32	53	61	53	69	31	48	59



10) In a survey, 20 people were asked how many magazines they had purchased during the previous year. The results are shown below. Construct a histogram to represent the data. Use 4 classes with a class width of 10, and begin with a lower class limit of -0.5. What is the approximate amount at the center? 10)_____

6	15	3	36	25	18	12	18	5	30
24	7	0	22	33	24	19	4	12	9



11) Suppose that a data set has a minimum value of 24 and a maximum of 79 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 11 instead of 12? 11)_____

12) Kevin asked some of his friends how many hours they had worked during the previous week at their after-school jobs. The results are shown below. 12)_____

5	6	5	4	5	5	9	8	5	3	7	6
6	7	5	6	7	5	6	8	6	7	8	4

Construct a frequency distribution. Use 4 classes, a class width of 2 hours, and a lower limit of 3 for class 1.

Hours	Frequency

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13) Describe the differences between a histogram and a stemplot and discuss the advantages and disadvantages of each. 13)_____

14) The following data set represents Heather's average monthly charges (in $) for cable TV for the past 12 months. 14)_____

105 125 110 98 102 115 110 123 118 101 95 128

Construct a frequency distribution with 4 classes.

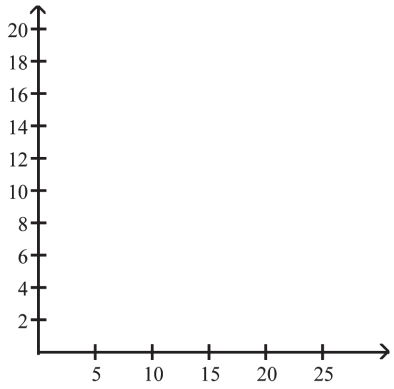
Charges	Frequency

15) The frequency distribution below summarizes the home sale prices in the city of Summerhill for the month of June. Determine the class width, class midpoint, and the class boundaries for the class 235.0-265.9. 15)_____

Sale Price (in thousand $)	Frequency
80.0 - 110.9	2
111.0 - 141.9	5
142.0 - 172.9	7
173.0 - 203.9	10
204.0 - 234.9	3
235.0 - 265.9	1

16) The frequency table below shows the amount of weight loss during the first month of a diet program for a group of men. Constructing a frequency polygon. Applying a loose interpretation of the requirements for a normal distribution, do the pounds of weight loss appear to be normally distributed? Why or why not? 16)_____

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



17) Explain in your own words why a bar graph can be misleading if one or both of the scales begin at some value other than zero. 17)_____

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18) Define the difference between a Relative Frequency Distribution and a Cumulative Frequency Distribution. 18)_____

19) Graphs should be constructed in a way that is fair and objective. A common deceptive graph alters the axes of the graph in what way? 19)_____

20) Describe how a data point labeled as an outlier can affect the analysis of a data set in a frequency distribution or histogram. 20)_____

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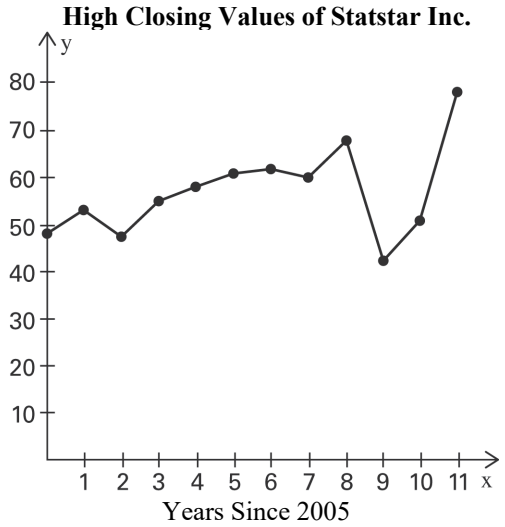
1) In a Pareto chart, the bars are arranged in descending order according to frequencies. The Pareto chart helps us understand data by drawing attention to the categories which have the highest frequencies.

2)

Cause	Frequency
U	9
I	9
F	7
O	5

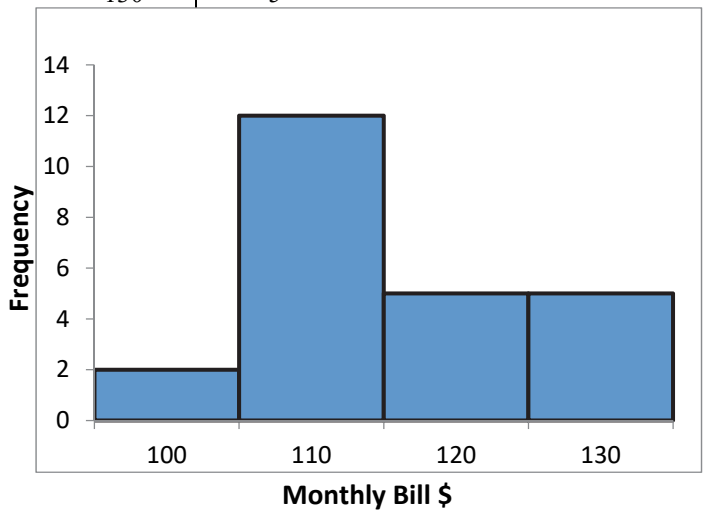
3) Trend: Answers will vary. Possible answer: Except for a drop in high closing value in 2007, there was a steady rise through 2013, after which there was a sharp drop in 2014 followed by increases through 2016.



4) Answers will vary. Possible answer: The shape of a distribution can readily be seen. The plot can be drawn quicker, since class width need not be calculated.

5)

Charges $	Frequency
100	2
110	12
120	5
130	5



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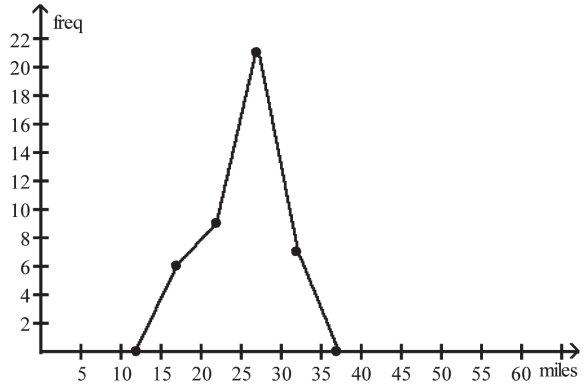
6)

Charges	Frequency
7.00-9.99	2
10.00-12.99	3
13.00-15.99	5
16.00-18.99	2

7) The frequency polygon appears to roughly approximate a normal distribution. The frequencies increase to a maximum and then decrease, and the graph is symmetric with the left half being roughly a mirror image of the right half.

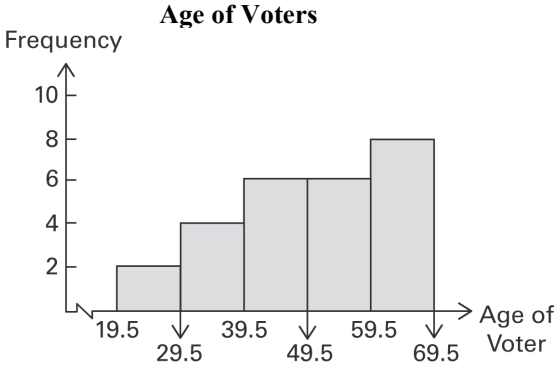
Roundtrip Mileage to School



8) The graph distorts the data because the the vertical scale starts at 60 rather than 0, giving the impression of a large difference in the number of accidents, when actually the number of accidents only varies from 90 to 120. To make the graph less misleading, change the vertical scale so that it begins at 0 and increases in increments of 20.

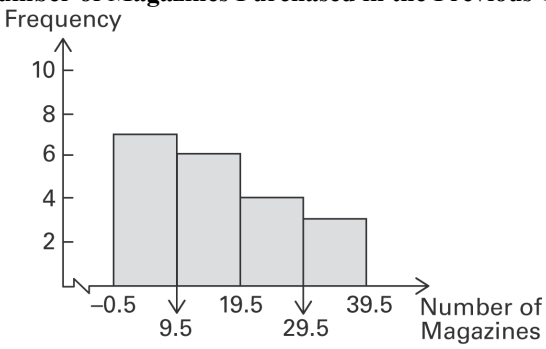
9) The approximate age at the center is 50 years.

Age of Voters



10) The approximate amount at the center is 16 magazines.

Number of Magazines Purchased in the Previous Year



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11) Since the range is $79 - 24 = 55$, and 55 divided by 5 equals 11, a whole number, the class width has to be widened from 11 to 12. If the class width was 11 data values equal to 79 would not be included in the frequency distribution.

12)

Hours	Frequency
3-4	3
5-6	13
7-8	7
9-10	1

13) Describe the differences between a histogram and a stemplot and discuss the advantages and disadvantages of each.
Answers will vary. A histogram organizes the data into classes that have widths determined by the designer. Once a histogram has been created, the original data values can no longer be determined. An advantage is that large amounts of data can be organized into a relatively small space. For stemplots, the groups are determined by place value. The original data values are still accessible from stemplots. Stemplots can be prohibitively large for large sets of data.

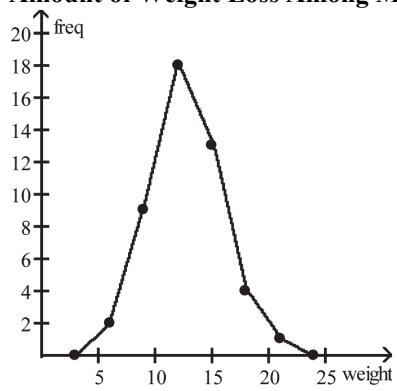
14)

Charges $	Frequency
100	2
110	5
120	2
130	3

15) class width: 31; class midpoint: 250.45; class boundaries: 234.95, 265.95

16) The frequency polygon appears to roughly approximate a normal distribution. The frequencies increase to a maximum and then decrease, and the graph is symmetric with the left half being roughly a mirror image of the right half.

Amount of Weight Loss Among Males During First Month



17) A bar graph with these characteristics exaggerates the differences in the data.

18) A relative frequency distribution displays the proportion or percentage of the total. The sum of the percentages is 100%. Another variation of a frequency distribution is a cumulative frequency distribution in which the frequency for each class is the sum of the frequencies for that class and all previous classes

19) A common deceptive graph involves using a vertical scale that starts at some value greater than zero to exaggerate differences between groups.

20) An outlier is defined as a data point far away from the other data points. An outlier affects the calculation of the mean of a data set and will pull the mean towards the outlier. In addition, an outlier will extend the range of the data set, causing most of the bin intervals to be bunched together along with a large range of bins with no data until the outlier bin is reached. This makes the analysis more difficult if the outlier is included making it more difficult to see the behavior of the rest of the data points.

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