

Chapter 2

1. Answer True or False. The main types of data are qualitative and numerical.

Ans: True

Difficulty Level: Easy Learning Objective: Distinguish between categorical (qualitative) and numerical (quantitative) data.

2. The two types of variables are continuous and _____.

Ans: discrete

Difficulty Level: Easy Learning Objective: Distinguish between categorical (qualitative) and numerical (quantitative) data.

3. The measurement scale for a _____ variable does not have gaps.

Ans: continuous

Difficulty Level: Medium Learning Objective: Distinguish between categorical (qualitative) and numerical (quantitative) data.

4. In describing a data set of measurements, the computation of numerical measures is irrelevant.

Ans: False Difficulty Level: Easy Learning Objective: Distinguish between categorical (qualitative) and numerical (quantitative) data.

5. Both, categorical and numerical data can be described graphically using tables and _____.

Ans: Graphs

Difficulty Level: Easy Learning Objective: Distinguish between categorical (qualitative) and numerical (quantitative) data.

6. A frequency table for a sample of units

- A) shows all sample units
- B) shows the counts of individual categories
- C) shows all units within a category
- D) shows the relative frequencies of each category

Ans: B Difficulty Level: Medium Learning Objective: Create a frequency distribution for discrete data.

7. A die is rolled 16 times, the scores are shown below.

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

a) Find the frequency of even numbers.

b) Find the relative frequency of even numbers. Round your answer to three decimal places.

Ans: a) 9

b) .563

Difficulty Level: Medium Learning Objective: Compute relative frequencies.
Create a frequency distribution for discrete data.

8. A die is rolled 16 times, the scores are shown below.

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

a) Find the frequency of 5.

b) Find the relative frequency of 5. Round your answer to four decimal places.

Ans: a) 4

b) .2500

Difficulty Level: Medium Learning Objective: Compute relative frequencies.
Create a frequency distribution for discrete data.

9. A die is rolled 16 times, the scores are shown below.

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

5

a) Find the frequency of numbers larger than 4.

b) Find the relative frequency of numbers larger than 4. Round your answer to four decimal places.

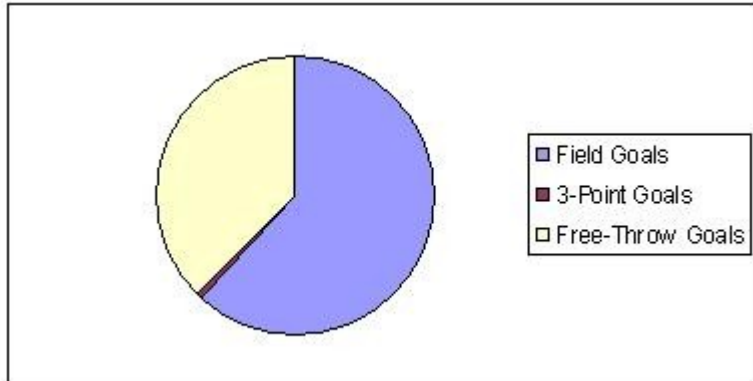
Ans: a) 5

b) .3125

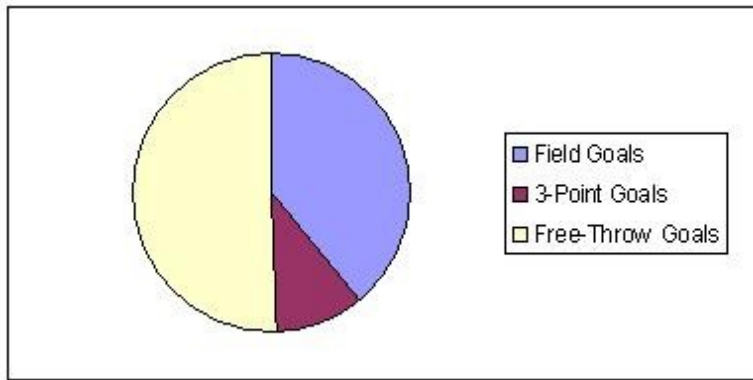
Difficulty Level: Medium Learning Objective: Compute relative frequencies.
Create a frequency distribution for discrete data.

10. In a recent basketball season, one-star player scored 475 field goals, 4 3-point field goals, and 292 free-throw goals. Find the pie chart that better describes the data.

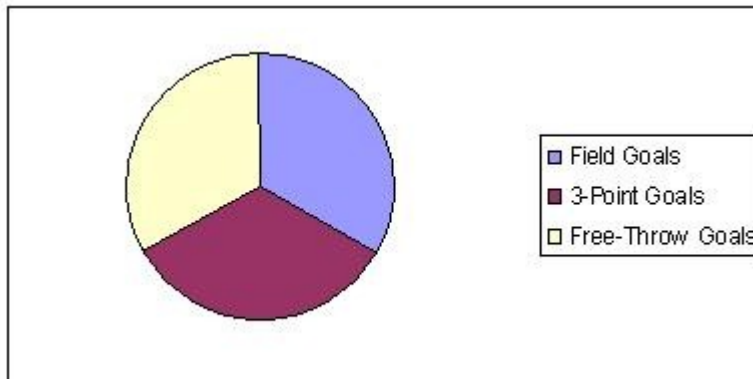
A)



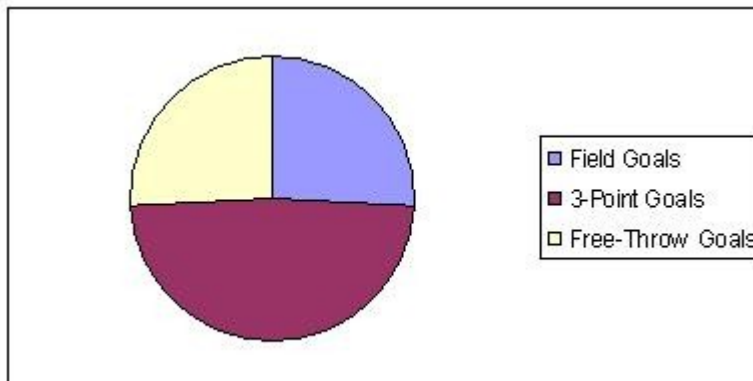
B)



C)



D)



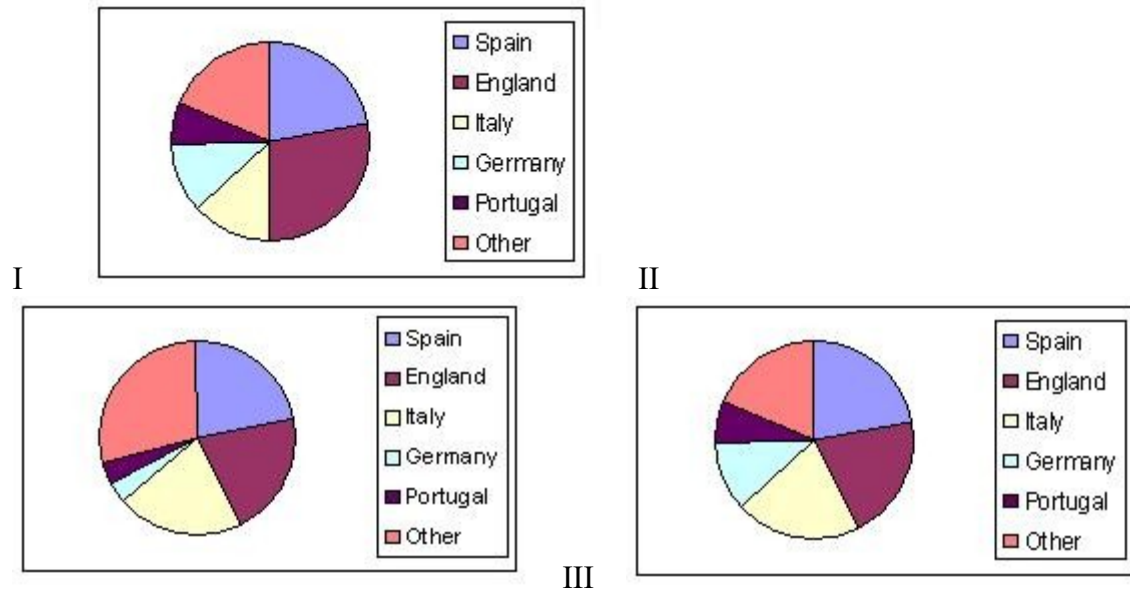
Ans: A Difficulty Level: Easy Learning Objective: Construct a pie chart from a relative frequency table.

11. The following table shows the countries whose teams have won the UEFA Champions League.

Country	Frequency
Spain	12
England	11
Italy	11
Germany	6
Portugal	4
Other	10

a) Calculate the relative frequency of each country. Round your answers to three decimal places

b) Select the pie chart that better describes the data.



Ans: a)

Country	Relative Frequency
Spain	.222
England	.204
Italy	.204
Germany	.111
Portugal	.074
Other	.185

b) III

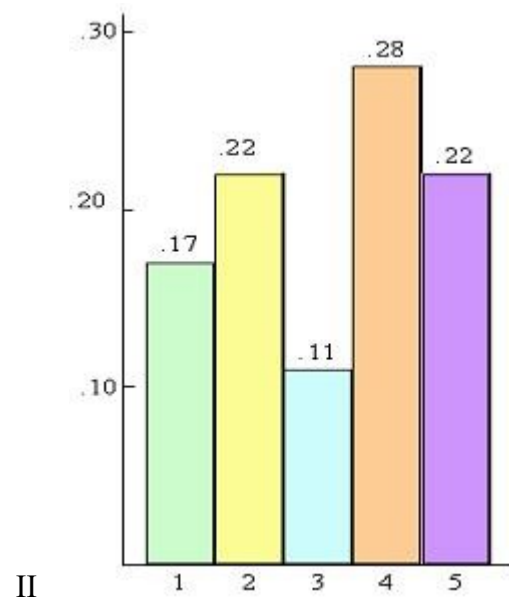
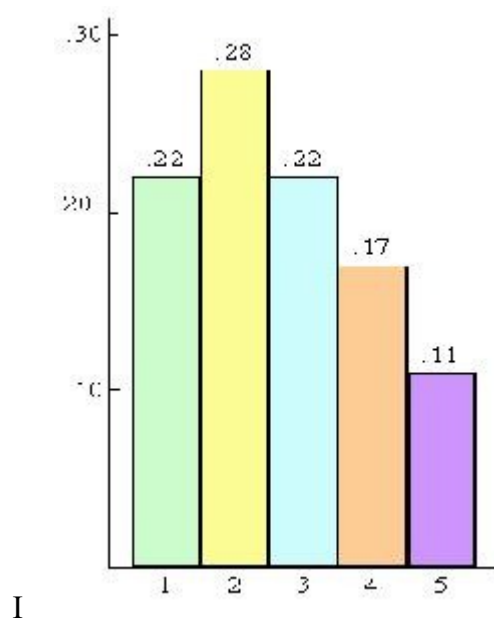
Difficulty Level: Medium

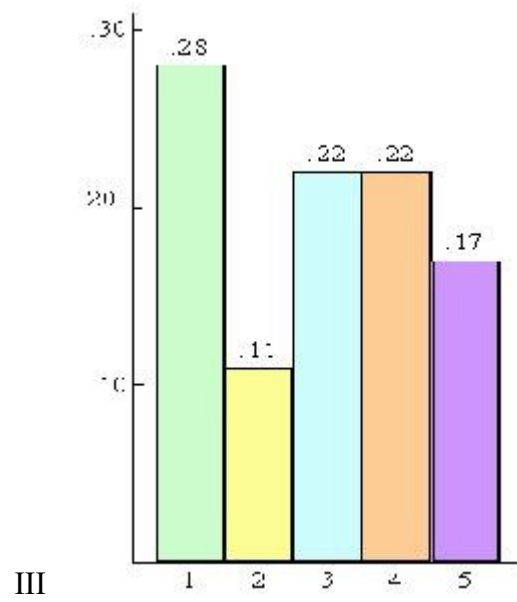
Learning Objective: Construct a pie chart from a

relative frequency table.

12. Find the histogram that better describes the data.

Value x	Frequency	Relative Frequency
1	4	.22
2	5	.28
3	4	.22
4	3	.17
5	2	.11
Total	18	1.000



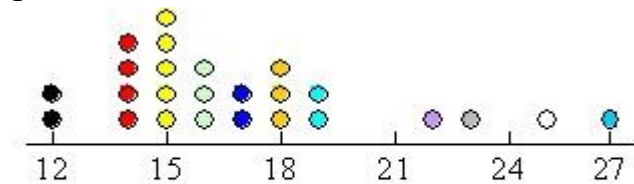


Learning Objective: Construct a histogram for continuous

Difficulty Level: Easy

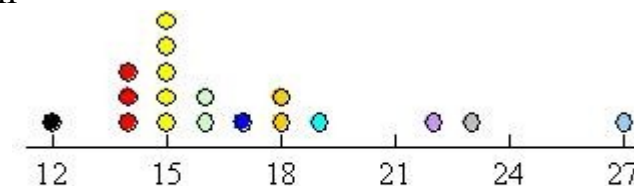
- | | | | | | | | | |
|----|----|----|----|----|----|----|----|----|
| 12 | 14 | 15 | 15 | 16 | 16 | 17 | 23 | 22 |
| 18 | 18 | 15 | 14 | 15 | 19 | 14 | 27 | 15 |

I



FIFA's World Cup: Goals Scored

II



FIFA's World Cup: Goals Scored

Ans: II

Learning Objective: Construct and interpret a dot diagram.

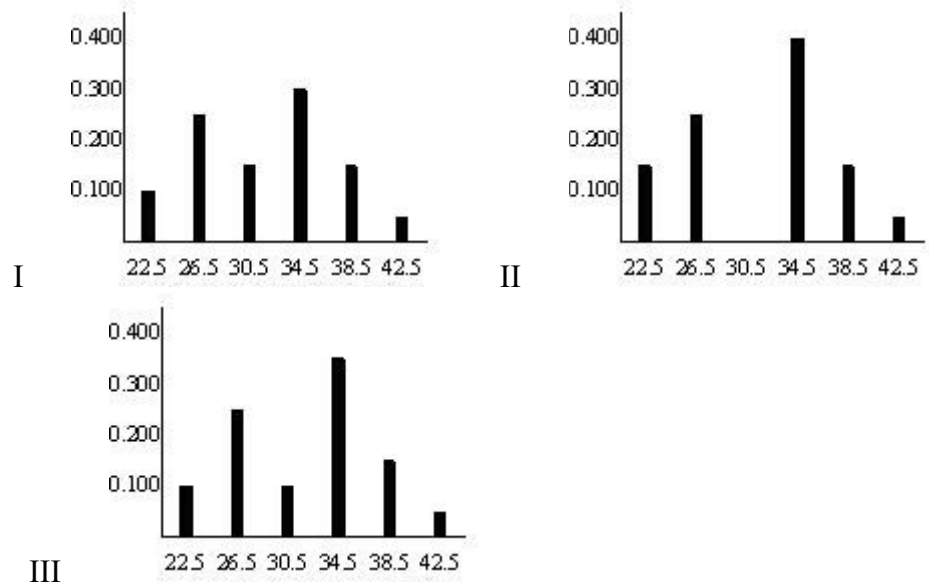
14. The number of touchdowns of a college football team is:

38 36 23 33 37 36 35 34 43 27 36 38 21 26
26 27 33 22 28 36

a) Complete the frequency distribution.

Class Interval	Frequency	Relative Frequency
21 - 24	----	----
25 - 28	5	.250
29 - 32	----	----
33 - 36	----	----
37 - 40	3	.150
41 - 44	1	.050
Total	20	1.000

b) Select the line diagram that matches the data.



Ans: a)

Class Interval	Frequency	Relative Frequency
21 - 24	3	.150
25 - 28	5	.250
29 - 32	0	.000
33 - 36	8	.400
37 - 40	3	.150
41 - 44	1	.050
Total	20	1.000

b) II

Difficulty Level: Medium Learning Objective: Compute relative frequencies.;
Construct line diagram; Create a frequency distribution for discrete data.

15. The following data represents the Tampa Buccaneers number of touchdowns per season, in 20 seasons. Make a stem-and-leaf display.

38 36 23 33 37 36 35 34 43 27
36 38 21 26 26 27 33 22 28 36

Ans:

```

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

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Difficulty Level: Easy

Learning Objective: Construct and interpret a stem-and-leaf display.

16. Use the stem-and-leaf display to construct a frequency distribution with intervals 10-12, 13-15, ..., 25-27.

```

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

```

Ans:

Interval	Frequency
10 - 12	2
13 - 15	6
16 - 18	6
19 - 21	2
22 - 24	3
25 - 27	2

Difficulty Level: Medium

Learning Objective: Construct and interpret a stem-and-leaf display.

17. The table below shows the fastest race lap in the F1 Grand Prix in Monza.

Year	Speed (km/h)	Year	Speed (km/h)
20	246	10	243
19	237	9	244
18	252	8	239
17	253	7	241
16	256	6	240
15	257	5	243
14	255	4	250
13	249	3	242
12	245	2	243
11	234	1	242

Make a stem-and-leaf display with a 2-digit stem.

Ans:

23	4 7 9
24	0 1 2 2 3 3 3 4 5 6 9
25	0 2 3 5 6 7

Difficulty Level: Easy

Learning Objective: Construct and interpret a stem-and-leaf display.

18. Calculate the mean and median of the following data set.

16, 17, 2, 13, 7

Ans: Mean: 11

Median: 13

Difficulty Level: Medium

Learning Objective: Compute and interpret the sample mean.; Compute and interpret the sample median.

19. Calculate the mean and median of the following data set. Round your answer to the nearest tenth.

29 26 32 52 30 51

A) 36.7 and 30, respectively

C) 36.7 and 31, respectively

B) 36.7 and 32, respectively

D) Mean: 36.7; there is no median

Ans: C Difficulty Level: Medium Learning Objective: Compute and interpret the sample mean. Compute and interpret the sample median.

20. Calculate the mean and the median of the following data set.

3.8 4.3 4.9 5.4 4.7 3.9

Ans: Mean: 4.50

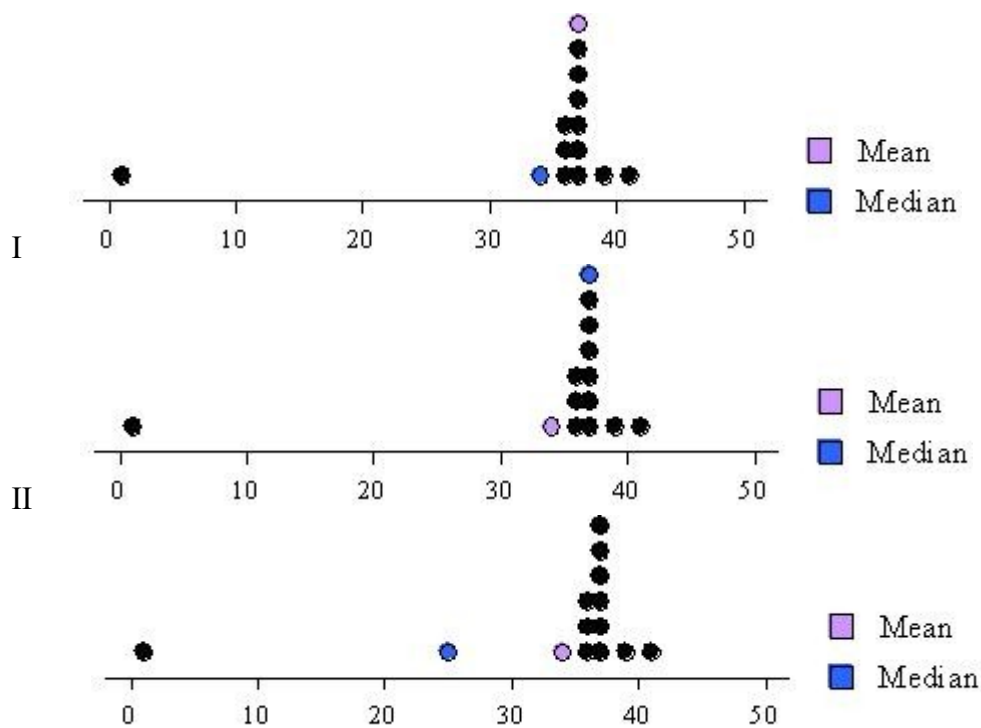
Median: 4.5

Difficulty Level: Medium Learning Objective: Compute and interpret the sample mean; Compute and interpret the sample median.

21. In a period of twelve years, the record low temperatures (°F) in Los Angeles CA were:

37 37 36 37 1 37 37 37 36 36 39 41

Find the dot diagram that corresponds to these data.



III

Ans: II

Difficulty Level: Difficult Learning Objective: Compute and interpret the sample mean. Compute and interpret the sample median.; Construct and interpret a dot diagram.

22. Calculate the quartiles of the following data set.

$$\begin{array}{cccccccccccc} 11 & 13 & 11 & 21 & 13 & 13 & 11 & 21 & 11 & 11 \\ & & & 13 & 21 & 11 & 21 & 13 & & \end{array}$$

Ans: $Q_1 = 11$, $Q_2 = 13$, $Q_3 = 21$

Difficulty Level: Difficult Learning Objective: Compute sample quartiles.

23. Calculate the third quartile.

39 13 25 24 31 27 26 29 13 23 39 25
 31 13 13 31 24 23 23 29 31

A) 26 B) 31 C) 25 D) 27

Ans: B Difficulty Level: Difficult

Learning Objective: Compute sample quartiles.

24. Answer True or False. The second quartile of a data set always corresponds to the median.

Ans: True Difficulty Level: Medium

Learning Objective: Compute sample quartiles.

25. Answer True or False. The second quartile of a data set always corresponds to the mean.

Ans: False Difficulty Level: Medium

Learning Objective: Compute sample quartiles.

26. Find the 10th percentile.

1.6 1.7 1.8 1.8 1.9 2.1 2.5 3.0 3.0 4.4
4.5 4.5 5.9 7.1 7.4 7.5 7.7 8.6 9.3 9.5

A) 1.7 B) 1.8 C) 1.72 D) 1.75

Ans: D Difficulty Level: Medium

Learning Objective: Compute a percentile

27. Find the interquartile range.

 128 145 124 249 194 252 129 156
102

 217 157 210 254 163 212 172 76

Ans: 83

Difficulty Level: Difficult

Learning Objective: Calculate the interquartile range for a data set.

28. Answer True or False. The interquartile range is the difference between any two consecutive quartiles.

Ans: False Difficulty Level: Medium

Learning Objective: Calculate the interquartile range for a data set.

29. Answer True or False. The range is the difference between the largest observation and the smallest observation.

Ans: True Difficulty Level: Easy

Learning Objective: Compute sample range.

30. For the data set $\begin{matrix} 6 & 10 & 1 \end{matrix}$
- a) Calculate the deviations $(x - \bar{x})$. Round your answers to two decimal places.

b) Calculate the sample variance and the standard deviation.

Ans: a) 0.33, 4.33, and -4.67, respectively

b) variance: 20.3

standard deviation: 4.5

Difficulty Level: Difficult Learning Objective: Compute sample standard deviation.; Compute sample variance.

31. For the data set $\begin{matrix} 2.2 & 2.7 & 8.5 & 7.5 & 4.7 \end{matrix}$

a) Calculate the deviations $(x - \bar{x})$ and check to see that they add up to 0.

b) Calculate the sample variance and the standard deviation.

Round your answers to two decimal places.

Ans: a) -2.92, -2.42, 3.38, 2.38, and -0.42, respectively

b) variance: 7.91

standard deviation: 2.81

Difficulty Level: Difficult Learning Objective: Compute sample standard deviation.; Compute sample variance.

32. For the data set $\begin{matrix} 4 & 4 & 6 & 9 \end{matrix}$

calculate s^2 by using the alternative formula. Round your answer to the nearest tenth.

Ans: $s^2 = 5.6$

Difficulty Level: Medium Learning Objective: Compute a sample variance using the alternative formula.; Compute sample variance.

33. Find the variance of the following data set.

$\begin{matrix} 5 & 8 & 8 \end{matrix}$

A) 1.4 B) 2.0 C) 1.7 D) 3.0

Ans: D Difficulty Level: Medium

Learning Objective: Compute sample variance.

34. Find the standard deviation of the following data set.

232 303 244 353

A) 56.0 B) 57.0 C) 49.5 D) 48.5

Ans: A Difficulty Level: Medium

Learning Objective: Compute sample standard deviation.

35. A football fan recorded the total number of points scored by 5 teams during week 1.

23 26 36 36 44

a) Calculate the sample variance.

b) Calculate the sample standard deviation.

Ans: a) $s^2 = 72.0$

b) $s = 8.5$

Difficulty Level: Difficult Learning Objective: Compute sample standard deviation.; Compute sample variance.

36. A report on the points gained by football teams playing at home in week 2 of the season are summarized below.

Descriptive Statistics:		PntHom		
Variable	N	Mean	Median	StDev
PntHom	16	22.04	23.00	12.56
Variable	Minimum	Maximum	Q1	Q3
PntHom	3	28	12.00	24.00

a) Calculate the sample variance.

b) Calculate the interquartile range.

Ans: a) 157.75

b) 12

Difficulty Level: Difficult Learning Objective: Calculate the interquartile range for a data set.; Compute sample variance.

37. Answer True or False. According to the empirical guidelines for symmetric bell-shaped distributions, approximately 95% of the data lie within $\bar{x} \pm 2s$.

Ans: True Difficulty Level: Easy Learning Objective: Analyze a data set using the empirical guidelines.

38. Refer to the data.

21 42 35 35 39 24 40 38 40 44
 32 37 29 25 33 31 34 42 28 43

a) Calculate $\bar{x}$ and s .

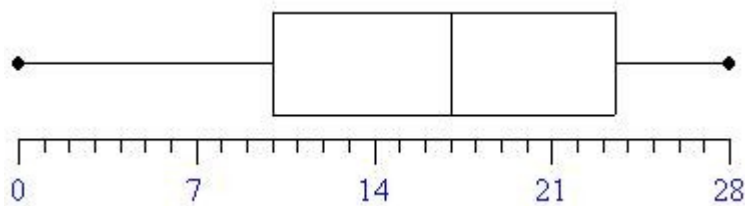
b) Find the proportion of the observations that are in the intervals $\bar{x} \pm s$, $\bar{x} \pm 2s$, and $\bar{x} \pm 3s$.

Ans: a) $\bar{x} = 34.6$, $s = 6.7$

b) $13/20 = 0.65$, $19/20 = 0.95$, and $20/20 = 1.00$, respectively

Difficulty Level: Difficult Learning Objective: Analyze a data set using the empirical guidelines; Compute and interpret the sample mean. Compute sample standard deviation.

39. Based on the boxplot,



complete the table.

Minimum	Q_1	Median	Q_3	Maximum
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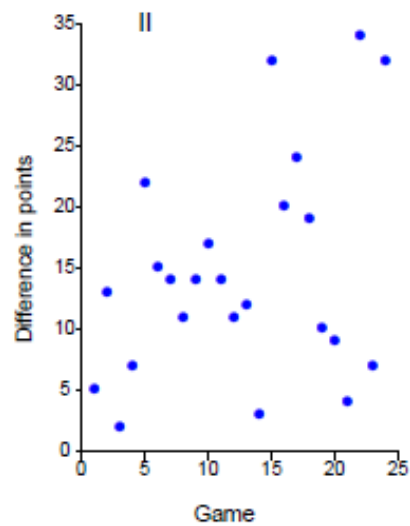
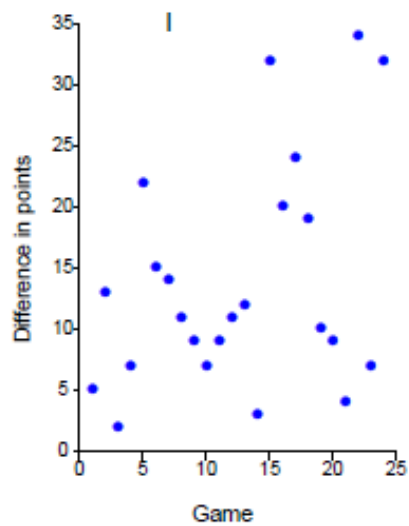
Ans:

Minimum	Q_1	Median	Q_3	Maximum
0	10	17	23.5	28

Difficulty Level: Easy Learning Objective: Construct and interpret box-plots for data sets.

40. During a recent season, the Orlando Magic basketball team won 59 games. The difference in points for 24 of these games is shown below. Find the time plot that corresponds to these data.

5	13	2	7	2	15	14	11	9	7	9	11
12	3	32	20	24	19	10	9	4	34	7	32



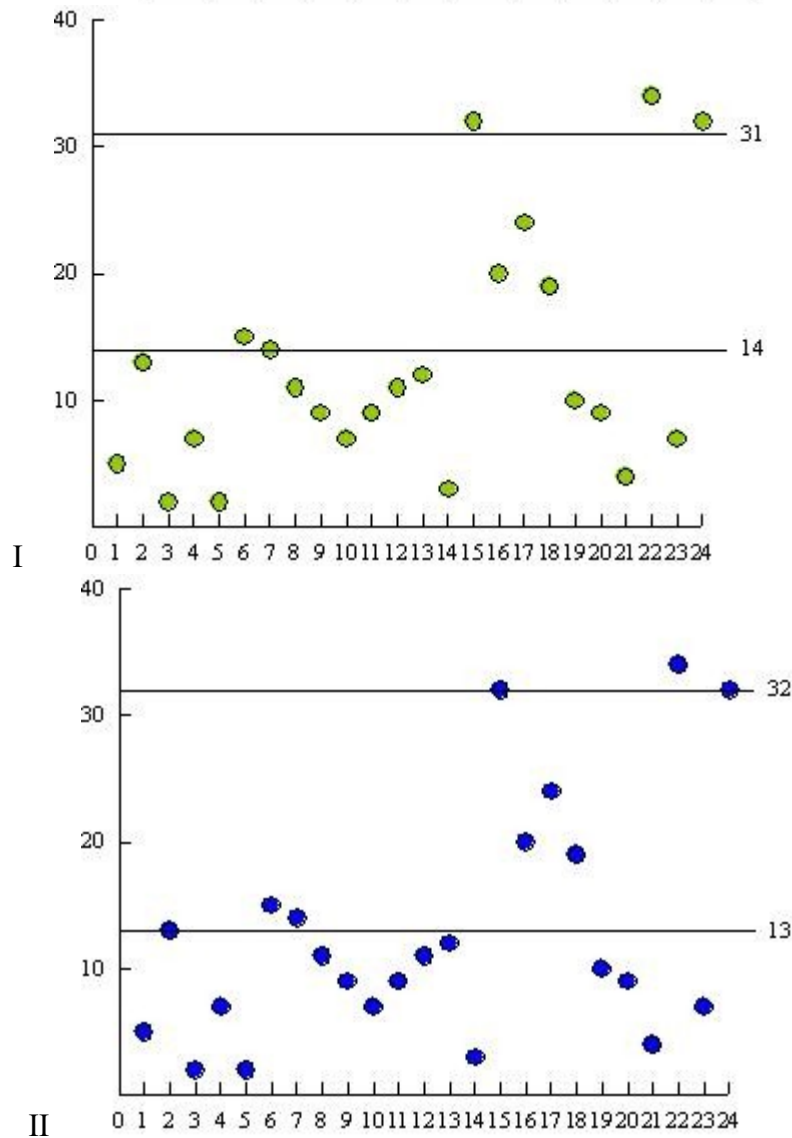
Ans: I

Difficulty Level: Medium

Learning Objective: Construct and interpret a time plot

41. During a recent regular season, the Orlando magics basketball team won 59 games. The difference of points in 24 of these games is shown below. Find the control chart that corresponds to these data.

5	13	2	7	2	15	14	11	9	7	9	11
12	3	32	20	24	19	10	9	4	34	7	32



Ans: II

Difficulty Level: Medium

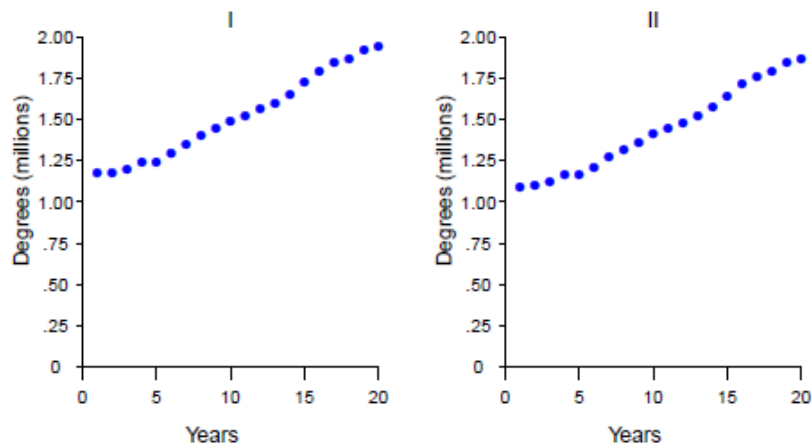
Learning Objective: Construct and interpret a control chart

42. The number of bachelor's degrees earned in the United States, over a recent 20-year period are given in the following table. The number is presented in millions of degrees.

Year		1	2	3	4	5
6	7	8	9	10		
Number	1.17	1.18	1.20	1.24	1.24	1.29
	1.40	1.44	1.49			

Year		11	12	13	14	15	16
17	18	19	20				
Number	1.52	1.56	1.60	1.65	1.72	1.79	1.84
	1.87	1.92	1.94				

Select the time plot of the number of bachelor's degrees.



Ans: I

Difficulty Level: Difficult

Learning Objective: Construct and interpret a time plot

43. The stem-and-leaf display given here shows the final examination scores of students in a statistics course. (Leaf unit = 1.0)

**Stem-and-Leaf
Display of Scores**

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

- a) Find the median score.
- b) Find the quartiles Q_1 and Q_3 .
- c) What proportion of the students scored below 70? Round your answer to three decimal places.
- Ans: a) 66.5

b) $Q_1 = 50, Q_3 = 79$

c) .526

Difficulty Level: Medium

Learning Objective: Construct and interpret a stem-and-leaf display.

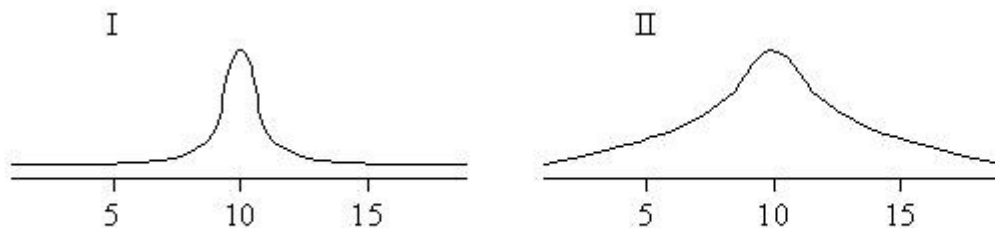
44. Answer True or False. If M is the mean of x_1, x_2 , and x_3 , then the mean of $50x_1, 50x_2$, and $50x_3$ is $50M$.

Ans: True Difficulty Level: Easy Learning Objective: Compute and interpret the sample mean.

45. Answer True or False. If M is the mean of x_1, x_2 , and x_3 , then the mean of $x_1 + 3, x_2 + 3$, and $x_3 + 3$ is $M + 3$.

Ans: True Difficulty Level: Easy Learning Objective: Compute and interpret the sample mean.

46. Let s_1 , s_2 , and s_3 be the standard deviations of the bell-shaped graphs I, II, and III, respectively. Place them in increasing order.



- A) s_2, s_3, s_1 B) s_1, s_3, s_2 C) s_3, s_1, s_2 D) s_2, s_1, s_3

Ans: B Difficulty Level: Medium Learning Objective: Use measures of variation to compare two data sets

47. If the median of the following set of data is 11.1, find the value of x .

- A) 10.6 B) 11.1 C) 11.6 D) Cannot be determined

Ans: C Difficulty Level: Difficult Learning Objective: Compute and interpret the sample median.

48. The sum of all deviations equals _____.

Ans: Zero

Difficulty Level: Easy Learning Objective: Compute sample standard deviation.

49. Since the median is not affected by a few very small or very large observations, the _____ is likely to be a more sensible measure of center than the _____.

Ans: mean, median

Difficulty Level: Medium Learning Objective: Compute and interpret the sample mean.; Compute and interpret the sample median.

50. The table below shows the attendance to the Super Bowl for 14 years

Year	Attendance	Year	Attendance
1	61,545	8	64,704
2	61,062	9	62,544
3	60,190	10	68,436
4	61,382	11	65,242
5	75,482	12	76,775
6	75,206	13	57,433
7	62,784	14	68,756

a) Find the 10th percentile.

b) Find the interquartile range.

Ans: a) 60,190

b) 7,374

Difficulty Level: Difficult Learning Objective: Calculate the interquartile range for a data set. Compute a percentile

UNDERSTANDING CALCULATIONS AND CONCEPTS

2.1 Three friends eat out together once a week and they split the bill so each pays x dollars. Because the same person always orders much more than the other two, they decide it is much fairer to each pay the median of the three meals. Is there anything wrong with this plan?

Ans: If each pays the median amount, it is unlikely the bill will be covered.

2.2 Consider the data

6 4 8 4 3

concerning the number of visits by five students to a fast food establishment in the last 30 days,

Calculate the

(a) sample mean

(b) deviations $x - \bar{x}$ and check to see that they add up to 0.

(c) sample variance. Give the units of variance.

(d) sample standard deviation.

Ans: (a) 5 (b) $x - \bar{x} = 1 - 1 \quad 3 - 1 - 2$ (c) 4 (d) 2

2.3 For the data concerning the number of chemistry class discussion sections skipped by 5 students last semester.

1 3 4 9 3

Calculate the

- (a) sample mean
- (b) deviations $x - \bar{x}$ and check to see that they add up to 0.
- (c) sample variance. Give the units of variance.
- (d) sample standard deviation.

Ans: (a) 4 and $x - \bar{x} = -3 - 1 0 5 - 1$ (b) 9 (c) 3

2.4 Five students reported the number of canned/bottled beverages they consumed last week

3 7 3 11 1

Calculate the

- (a) sample mean
- (b) deviations $x - \bar{x}$ and check to see that they add up to 0.
- (c) sample variance. Give the units of variance.
- (d) sample standard deviation.

Ans: (a) 5 and $x - \bar{x} = -2 \ 2 \ -2 \ 6 \ 4$ (b) 16 (c) 4

2.5 Consider the software summary of the data on the length of a wolf's Canine(mm).

n = 19

sd(x) = 1.969

Min.	1st Qu.	Median	Mean	3rd Qu.	Max.
24.00	27.05	27.80	27.89	29.05	32.30

- (a) sample range
- (b) sample interquartile range.
- (c) $(\bar{x} - 2s, \bar{x} + 2s)$

Ans: (a) 8.3 (b) 2.00 (c) (23.95, 31.83)

Add the next problems, with heading, after current section of 40 Chapter 3 problems.

UNDERSTANDING CALCULATIONS AND CONCEPTS

- 3.1 For one coastal state, there is a high correlation between ice cream sales and number of people swimming in the ocean. Suggest a possible lurking variable and explain what is meant by the term *lurking variable*.

Ans: Outdoor temperature . A lurking variable is one that drives both observed variables. It can strengthen or weaken a relationship.

- 3.2 Consider the data set

x	5	3	2	2
y	8	2	4	2

Calculate the

- (a) sample means
 (b) S_{xx} , S_{xy} , S_{yy}
 (c) sample correlation coefficient.

Ans: (a) 3 and 4 (b) $S_{xx} = 6$, $S_{xy} = 10$ and $S_{yy} = 24$ (c)

$$\frac{10}{12} = .8333.$$

- 3.3 Consider the data set

x	1	3	4	9	3
y	6	4	8	4	3

Calculate the

- (a) sample means
 (b) S_{xx} , S_{xy} , S_{yy}
 (c) sample correlation coefficient.

Ans: (a) 4 and 5 (b) $S_{xx} = 36$, $S_{xy} = -5$ and $S_{yy} = 16$ (c)

$$-\frac{5}{24} = -.208.$$

3.4 Find the least square fitted line when the values of y and x are

x	2	3	6	5
y	6	5	9	4

Ans: $\beta_1 = .5$ and $\beta_0 = 4$ so $y = 4 + .5 x$

3.5 Find the least squares fitted line when the values of y and x are

x	4	6	7	5	3
y	2	4	6	2	1

Ans: $\beta_1 = 1.25$ and $\beta_0 = -3$ so $y = -3 + 1.25 x$

Add the next problems, with heading, after current section of 50 Chapter 4 problems.

UNDERSTANDING CALCULATIONS AND CONCEPTS

4.1 Out of 1000 students questioned, 320 only made the minimum required credit card payment at least one time in the past year.

(a) Give an estimate of the probability of

$A = [\text{only minimum payment at least one time in a year}]$

(b) Explain your reasoning.

Ans: (a) .32 (b) The long run relative frequency of an event stabilizes at the probability of an event.

- 4.2 A person is randomly selected from persons working in your state. Consider the two events

A = [Number of books read last year] B = [College graduate]

- (a) Given that the person is a college graduate, would you expect the probability of A to be larger, the same, or smaller than the unconditional probability $P(A)$? Explain your answer.
- (b) Are A and B independent according to your reasoning?

Ans: (a) Larger because college graduates are generally more apt to read. (b) Since our answer in (a) is that $P(A | B)$ is larger than $P(A)$ the two events are not independent.

- 4.3 A cable TV provider assigns 75% of its service calls to an independent contractor and 10 % of these calls result in consumer complaints. The other 25 % of the service calls are made by the companies' own employees, and these result in a 5% complaint rate.

Find the

- (a) Probability of receiving a complaint.
- (b) Probability that the complaint was from a customer serviced by the contractor.

Ans: (a) .09 (b) .8333

- 4.4 Let A be the event that a person tests positive for a virus and let B be the event that the person actually has the virus. Suppose that the virus is present in 5% of the population. Because medical tests are sometimes incorrect, we have the probabilities

$$.98 = P(A | B) \text{ and } .022 = P(A | \bar{B})$$

Find

- (a) the probability of a positive test
- (b) the probability person has the virus given that they test positive.

Ans: (a) .0699 (b) .701

replacement problems chapter 5

- 2 Each of the judges in a popular dancing contest assign point from 3 through 5 to each participating couple. Let X be the sum of the two scores assigned to a particular couple.
List the possible values for the sum of the two scores and also the pairs of scores that result in that sum.

Sum	Pairs of scores
4	
5	
6	
7	

Ans:

Sum	Pairs of scores
4	(2 , 2)
5	(3 , 2) (2 , 3)
6	(3 , 3) (4 , 2) (2 , 4)
7	(4 , 3) (3 , 4) (5 , 2) (2 , 5)

Difficulty Level: Medium Learning Objective: Construct a random variable from an experiment

add the next problems after the 40 original problems

4] for rate parameter $m = 2.4$ A) .779 B) 0.430 C) .221 D) .096
 Ans: C Difficulty Level: Medium Learning Objective: Use the Poisson distribution to compute probabilities of events

42 Consider a Poisson random variable with rate parameter $m = 4$. Find its:

- (a) Mean
- (b) Variance
- (c) Standard Deviation

Ans: (a) 4 (b) 4 (c) 2. Difficulty Level: Medium Learning Objective: Compute the mean and standard deviation of a Poisson random variable

43 Answer True or False: Is the Poisson distribution a suitable approximation for to the binomial distribution with $n = 55$ and $p = .03$

Ans: True Difficulty Level: Easy Learning Objective: Determine if Poisson approximation to binomial is reasonable.

UNDERSTANDING CALCULATIONS AND CONCEPTS

2.1 Three friends eat out together once a week and they split the bill so each pays x dollars. Because the same person always orders much more than the other two, they decide it is much fairer to each pay the median of the three meals. Is there anything wrong with this plan?

Ans: If each pays the median amount, it is unlikely the bill will be covered.

2.2 Consider the data

6 4 8 4 3

concerning the number of visits by five students to a fast food establishment in the last 30 days,

Calculate the

- (a) sample mean
- (b) deviations $x - \bar{x}$ and check to see that they add up to 0.
- (c) sample variance. Give the units of variance.
- (d) sample standard deviation.

Ans: (a) 5 (b) $x - \bar{x} = 1 - 1 \ 3 - 1 - 2$ (c) 4 (d) 2

- 2.3 For the data concerning the number of chemistry class discussion sections skipped by 5 students last semester.

1 3 4 9 3

Calculate the

- (a) sample mean
- (b) deviations $x - \bar{x}$ and check to see that they add up to 0.
- (c) sample variance. Give the units of variance.
- (d) sample standard deviation.

Ans: (a) 4 and $\sum (x - \bar{x}) = -3 - 1 + 0 + 5 - 1$ (b) 9 (c) 3

- 2.4 Five students reported the number of canned/bottled beverages they consumed last week

3 7 3 11 1

Calculate the

- (a) sample mean
- (b) deviations $x - \bar{x}$ and check to see that they add up to 0.
- (c) sample variance. Give the units of variance.
- (d) sample standard deviation.

Ans: (a) 5 and $\sum (x - \bar{x}) = -2 + 2 - 2 + 6 - 4$ (b) 16 (c) 4

- 2.5 Consider the software summary of the data on the length of a wolf's Canine(mm).

$n = 19$

$sd(x) = 1.969$

Min.	1st Qu.	Median	Mean	3rd Qu.	Max.
24.00	27.05	27.80	27.89	29.05	32.30

- (a) sample range
- (b) sample interquartile range.
- (c) $(\bar{x} - 2s, \bar{x} + 2s)$

Ans: (a) 8.3 (b) 2.00 (c) (23.95, 31.83)