

Chapter 2— True False Items

Three true/false tests follow, each with 10 items. The tests are designed to be representative of the chapter, equivalent, and fairly easy. Each test appears on a separate page and answers follow the third test. One use of these tests is as a “check-up,” a test given the first day a class meets after a chapter was assigned. Such a test should separate those who’ve read the chapter from those who haven’t. Of course, an important effect of such tests is that students who’ve read the chapter get to demonstrate that they’ve done the assignment.

TEST 1

1. Simple frequency distributions have class intervals that cover two or more scores.

T**F**
2. Horizontal axis, X-axis, and abscissa are all names for the same line.

T**F**
3. A frequency polygon and a histogram can be used for the same frequency distribution.

T**F**
4. A bar graph is used to present the frequencies of a quantitative variable.

T**F**
5. A bar graph is the proper graph for the frequency distribution of Satisfaction With Life Scale scores.

T**F**
6. Bell-shaped and rectangular distributions are symmetrical.

T**F**
7. A negatively skewed curve has a thin point directed to the right side of a graph.

T**F**
8. A line graph shows the relationship between two variables.

T**F**
9. Line graphs are used more extensively in psychology textbooks and journal articles than frequency polygons.

T**F**
10. Your text says that the primary use of graphs is to show results to others.

T**F**

TEST 2

1. Tally marks are not part of a formal presentation of a simple frequency distribution.
T F
2. Vertical axis, Y-axis, and abscissa are all names for the same line.
T F
3. A frequency polygon and a bar graph can be used for the same frequency distribution.
T F
4. A histogram is used to present the frequencies of a qualitative variable.
T F
5. The proper graph for the frequency distribution of college majors is a bar graph.
T F
6. A distribution with two humps is called a skewed distribution.
T F
7. A positively skewed curve has a thin point directed to the right side of a graph.
T F
8. A line graph and a frequency polygon can be used interchangeably.
T F
9. Line graphs are used more extensively in psychology textbooks and journal articles than bar graphs.
T F
10. Your text shows a template that gives the proportions for the X and Y axis that is “almost guaranteed to produce a pleasant-looking graph.”
T F

TEST 3

1. Grouped frequency distributions have class intervals that cover two or more scores.
T **F**
2. Horizontal axis, X-axis, and ordinate are all names for the same line.
T **F**
3. A histogram and a bar graph can be used for the same frequency distribution.
T **F**
4. A bar graph is used to present the frequencies of a qualitative variable.
T **F**
5. To show the relationship between serial position of words on a list and errors, the proper graph is a line graph.
T **F**
6. Bimodal distributions are an example of a normal distribution.
T **F**
7. A positively skewed curve has a thin point directed to the left side of a graph.
T **F**
8. A line graph shows the relationship between two variables.
T **F**
9. Bar graphs are used more extensively in psychology textbooks and journal articles than line graphs.
T **F**
10. Graphs are used by scientists in the early stages of a project, even before data are collected.
T **F**

ANSWERS TO TRUE/FALSE TESTS

TEST 1

1. False
2. True
3. True
4. False
5. False
6. True
7. False
8. True
9. True
10. False

TEST 2

1. True
2. False
3. False
4. True
5. True
6. False
7. True
8. False
9. True
10. False

TEST 3

1. True
2. False
3. False
4. True
5. True
6. False
7. False
8. True
9. False
10. True

Chapter 2 — Multiple-Choice Questions

Data Set 2-1

A student was interested in the structure of the families in the U.S. He sampled 29 of his 330 classmates and got the following answers to the question, "How many children are there in your family?"

3 1 2 2 4 2 1 2 2 1 3 2 3 3 4 2 2 1 3 5 1 1 3 5 2 4 7 1 2

1. Referring to Data Set 2-1, the proper frequency distribution is:

a.	$\frac{X}{f}$	b.	$\frac{X}{f}$	c.	$\frac{\text{Class Interval}}{f}$
	7 1		7 1		7-8 1
	5 2		5 2		5-6 2
	4 3		4 3		3-4 8
	3 5		3 6		1-2 18
	2 10		2 10		
	1 8		1 7		

d. None of the other alternatives are correct.

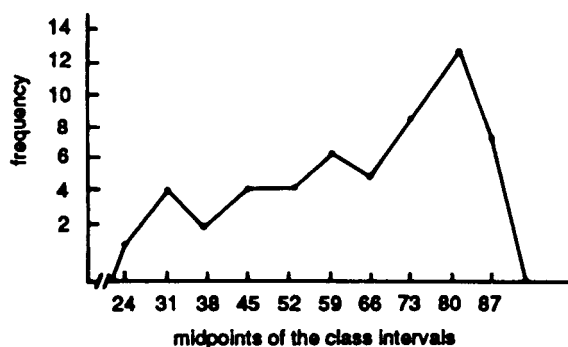
Answer: b. 90% correct; N = 29

2. Referring to Data Set 2-1, the distribution of these scores is

- positively skewed;
- negatively skewed;
- symmetrical;
- not skewed at all.

Answer: a. 86% correct; N = 29

Data Set 2-2



3. The distribution in Data Set 2-2 is

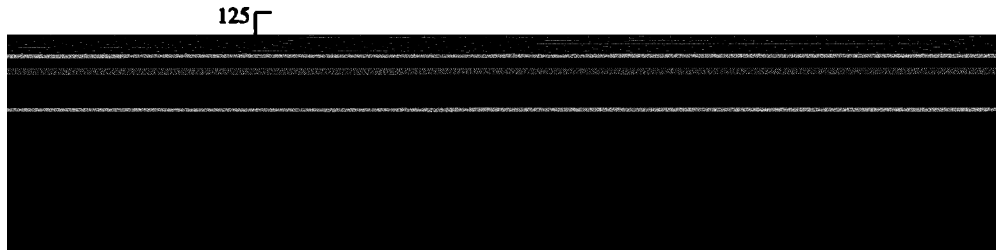
- positively skewed;
- negatively skewed;
- symmetrical;
- not skewed at all.

Answer: b. 89% correct; N = 75

4. Referring to Data Set 2-2, the number of scores in the interval 59 – 66 is
- 6;
 - 5;
 - 11
 - unknown, there is no such interval in Data Set 2-2.

Answer: d. 75% correct; N = 75

Data Set 2-3 The graph in Data Set 2-3 is based on registration figures by the American Kennel Club.



5. The proper name for the graph in Data Set 2-3 is
- frequency polygon;
 - histogram;
 - bar graph;
 - line graph.
6. Data Set 2-3
- is positively skewed;
 - is negatively skewed;
 - is not skewed;
 - is not appropriate for a determination of skewness.

Answer: c. 92% correct; N = 52

Answer: d. 56% correct; N = 52

7. According to convention, the class intervals with the numerically largest scores are placed in the _____ part of the frequency distribution.
- top;
 - middle;
 - bottom.

Answer: a.

8. The horizontal axis of a graph of a frequency distribution is called
- a line graph;
 - the ordinate;
 - the abscissa;
 - a histogram.

Answer: c.

9. A formal grouped frequency distribution is characterized by
- class intervals and tally marks;
 - class intervals and no tally marks;
 - scores and tally marks;
 - scores and no tally marks.

Answer: b.

10. A rough-draft grouped frequency distribution is characterized by
- class intervals and tally marks;
 - class intervals and no tally marks;
 - scores and tally marks;
 - scores and no tally marks.

Answer: a.

11. Which of the following intervals has a midpoint of 7?
- 5-7;
 - 3-7;
 - 5-9;
 - none of the other alternatives are correct.

Answer: c.

12. Which of the following class intervals has a midpoint of 45?
- 40-45;
 - 45-50;
 - 43-47;
 - none of the other alternatives are correct.

Answer: c.

13. The graph that is used to present quantitative variables is the
- frequency polygon;
 - histogram;
 - both frequency polygon or histogram;
 - neither frequency polygon nor histogram.

Answer: c.

14. Suppose you had frequency counts of the heights of people in the senior class at your school. The appropriate graph for such data would be a
- frequency polygon;
 - histogram;
 - both frequency polygon or histogram;
 - neither frequency polygon nor histogram.

Answer: c.

15. A frequency distribution can be presented with a
- bar graph;
 - line graph;
 - both bar graph and line graph;
 - neither bar graph nor line graph.

Answer: a. Student Companion Website

16. Which of the following is *not* used to present a frequency distribution?
- bar graph;
 - histogram;
 - frequency polygon;
 - line graph.

Answer: d. 72% correct; N = 81

17. Grouped frequency distributions and simple frequency distributions differ in
- the type of data displayed;
 - the range of scores covered by the distribution;
 - the conclusions that can be drawn about skewness;
 - all of the other alternatives are correct.

Answer: b.

18. Suppose you had frequency counts of colors of houses in a subdivision. The appropriate graph for such data would be
- frequency polygon;
 - histogram;
 - bar graph;
 - line graph.

Answer: c.

19. Suppose you had frequency counts of people who were listening to one of four radio stations. The appropriate graph for such data would be a
- frequency polygon;
 - histogram;
 - bar graph;
 - line graph.

Answer: c.

20. Suppose you had frequency counts of sparrows, starlings, swans, swallows, sandpipers, and sapsuckers. The appropriate graph for such data would be a
- bar graph;
 - histogram;
 - frequency polygon;
 - line graph.

Answer: a. 83% correct; N = 144

21. A line graph is used
- in place of a frequency polygon;
 - in place of a histogram;
 - in place of a bar graph;
 - to present the relationship between two variables.

Answer: d. 98% correct; N = 110

22. A frequency polygon and a histogram are alike in that they both
- are used to graph nominal scale data;
 - are examples of a line graph;
 - are used to graph empirical frequency distributions;
 - all of the other alternatives are correct

Answer: c. 89% correct; N = 102

23. The two graphic techniques that are almost interchangeable are the
- frequency polygon and histogram;
 - histogram and bar graph;
 - bar graph and line graph;
 - line graph and frequency polygon.

Answer: a. 77% correct; N = 64

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24. The graph that is used for qualitative variables is the

- a. frequency polygon;
- b. histogram;
- c. bar graph;
- d. line graph.

Answer: c.

25. The graph that is used to present categories of qualitative variables is

- a. frequency polygon;
- b. histogram;
- c. both frequency polygons and histograms;
- d. neither frequency polygons nor histograms.

Answer: d.

26. To graph the relationship between years and the number of automobile accidents, use

- a. frequency polygon;
- b. histogram;
- c. bar graph;
- d. line graph.

Answer: d.

27. To graph the relationship between age and auditory sensitivity, use a

- a. frequency polygon;
- b. histogram;
- c. bar graph;
- d. line graph.

Answer: d.

28. To present the relationship between two variables, you should use a

- a. frequency polygon;
- b. histogram;
- c. bar graph;
- d. line graph.

Answer: d.

29. The graph that is used to present data on two variables rather than one is the

- a. frequency polygon;
- b. histogram;
- c. bar graph;
- d. line graph.

Answer: d.

30. The best way to determine if a graph is a histogram or a bar graph is to look at

- a. the height of the bars;
- b. whether the bars are wide or narrow;
- c. the kind of variable on the Y axis;
- d. the kind of variable on the X axis.

Answer: d.

31. There is a separation between the bars of a
- frequency polygon;
 - histogram;
 - bar graph;
 - none of the other alternatives are correct.

Answer: c.

32. Psychologists measure parenting style as: Authoritarian, authoritative, and permissive. Parenting style is measured with a _____ variable.
- nominal;
 - ordinal;
 - interval;
 - ratio.

Answer: a.

33. To present a frequency distribution of nominal data you should use
- a frequency polygon;
 - a bar graph;
 - a histogram;
 - a line graph.

Answer: b.

34. Which alternative has elements that are congruent (all belong together)?
- X axis/ ordinate/ to the right is positive;
 - Y axis/ abscissa/ up is positive;
 - Y axis/ abscissa/ right is positive;
 - X axis/ abscissa/ to the right is positive.

Answer: d.

35. The graphic in the text showing the majors of college graduates was a
- histogram;
 - frequency polygon;
 - bar graph;
 - line graph.

Answer: c. 94% correct; N = 114 Student Companion Website

36. Assume you collect data from psychology majors who indicate their favorite class in psychology. Students choose from five classes. What kind of graph should you use to display the data?
- histogram;
 - bar graph;
 - line graph;
 - not enough information to answer this question.

Answer: b.

37. A distribution shaped like a box is a _____ distribution; one that has two peaks is a _____ distribution.
- bell-shaped; rectangular;
 - rectangular; bimodal;
 - bimodal; bell-shaped;
 - bimodal; bell-shaped.

Answer: b.

38. The distribution *not* described in the text was the
- rectangular curve;
 - triangular curve;
 - bimodal curve;
 - bell-shaped curve.

Answer: b.

39. A distribution with two separated peaks is a _____ distribution; one that is normal is a _____ distribution.
- bimodal; rectangular;
 - rectangular; bimodal;
 - bimodal; bell-shaped;
 - rectangular; bell-shaped.

Answer: c.

40. One example of a bell-shaped curve is the
- Liberty Distribution;
 - skewed distribution;
 - normal distribution;
 - double skew distribution.

Answer: c. 80% correct; N = 114

41. The normal distribution is a special case of a
- skewed distribution;
 - bell-shaped distribution;
 - rectangular distribution;
 - bimodal distribution.

Answer: b.

42. The serial position effect was displayed in the text with mean errors on the ordinate and serial position on the abscissa. This graphic is an example of a
- frequency polygon;
 - histogram;
 - bar graph;
 - line graph.

Answer: d. 71% correct; N = 87

43. The serial position effect shows that when material is learned in order, the most difficult part
- is near the beginning;
 - is near the middle;
 - is near the end;
 - depends on whether the material is numerical, poetry or prose.

Answer: b. 90% correct; N = 149

44. The fact that the middle of a series of items is more difficult to learn than the beginning or the end is known as the
- series effect;
 - middling effect;
 - bimodal effect;
 - serial position effect.

Answer: d. 90% correct; N = 81

45. Suppose a frequency distribution with a range of 0 to 100 was severely negatively skewed. The greatest frequency of scores would be clustered near
- a. 0;
 - b. 50;
 - c. 100;
 - d. unknown; not enough information is given.

Answer: c. 87% correct; N = 82 Student Companion Website

46. If a set of scores ranged from 50 to 99 and the distribution was negatively skewed, you would expect to find the fewest scores in the interval
- a. 50 to 59;
 - b. 60 to 69;
 - c. 80 to 89;
 - d. 90 to 99.

Answer: a. 83% correct; N = 131

47. The frequency distribution scores ranged from 0 to 100. Low scores were infrequent, there were a moderate number around 50, and near 100 scores were quite frequent. The distribution is
- a. positively skewed;
 - b. negatively skewed;
 - c. symmetrical;
 - d. not enough information is given.

Answer: b.

48. A negatively skewed curve
- a. is obtained if the scores are negative;
 - b. has the narrow, thin point directed toward the origin of the graph;
 - c. has the narrow, thin point directed away from the origin of the graph;
 - d. none of the other alternatives are correct.

Answer: b. 87% correct; N = 130

49. Skewness refers to
- a. the shape of the curve;
 - b. the number of items in the curve;
 - c. the standard error in the curve;
 - d. none of the other alternatives are correct.

Answer: a.

50. Suppose a frequency distribution with a range of 0 to 100 was severely positively skewed. The greatest frequency of scores would be clustered near
- a. 20;
 - b. 50;
 - c. 80;
 - d. unknown; not enough information is given

Answer: a. 87% correct; N = 120

51. Suppose a frequency distribution with a range of 0 to 100 was positively skewed. The greatest frequency of scores would be expected around
- a. 25;
 - b. 50;
 - c. 75;
 - d. any of the other alternatives are possible for a positively skewed distribution.

Answer: a.

52. In a negatively skewed curve
- a. the negative scores are more numerous than the positive scores;
 - b. the results did not come out the way the researcher hoped they would;
 - c. low scores are less frequent than high scores;
 - d. all the scores must have negative values.

Answer: c.

53. In a positively skewed curve
- a. the positive scores are more numerous than the negative scores;
 - b. the results came out the way the researcher hoped they would;
 - c. high scores are not as frequent as low scores;
 - d. all the scores must be positive scores.

Answer: c.

54. A distribution curve with two peaks is called
- a. normal distribution;
 - b. rectangular distribution;
 - c. bifrontal curve;
 - d. bimodal curve.

Answer: d. 98% correct; N = 46

55. When a curve has a shape with two peaks, it is called
- a. normal;
 - b. skewed;
 - c. rectangular;
 - d. bimodal.

Answer: d.

56. Graphs are popular because they
- a. allow comparisons to other studies when designing a project;
 - b. help guide future research;
 - c. serve as a clear description of previous research;
 - d. all of the other alternatives are correct.

Answer: d.

57. The development of graphics as we know them today
- a. ended about 1900;
 - b. ended about 1950;
 - c. ended about 1975;
 - d. continue, new designs are still being created.

Answer: d.

Chapter 2—Problems

1. Describe what the following graphs are used for.
 - a. line graph
 - b. frequency polygon
 - c. histogram
 - d. bar graph

Answer:

- a. line graph—to present the relationship between two variables.
- b. frequency polygon—to present frequency distributions of quantitative variables.
- c. histogram—to present frequency distributions of quantitative variables.
- d. bar graph—to present frequency distributions of qualitative variables.

2. Describe the distinguishing characteristics of the histogram, line graph, and frequency polygon.

Answer:

Histogram: Bars are raised from the X-axis to the appropriate frequencies. Each bar covers the space on the X-axis from the lower to the upper limit. There is no space between the bars.

Line Graph: Both the X - and Y -axes represent variables. Each point represents a score for X and a score for Y . Points are connected by straight lines.

Frequency Polygon: Midpoints of a quantitative variable are placed on the X-axis and frequencies on the Y-axis. Each point represents a score and the frequency of that score.

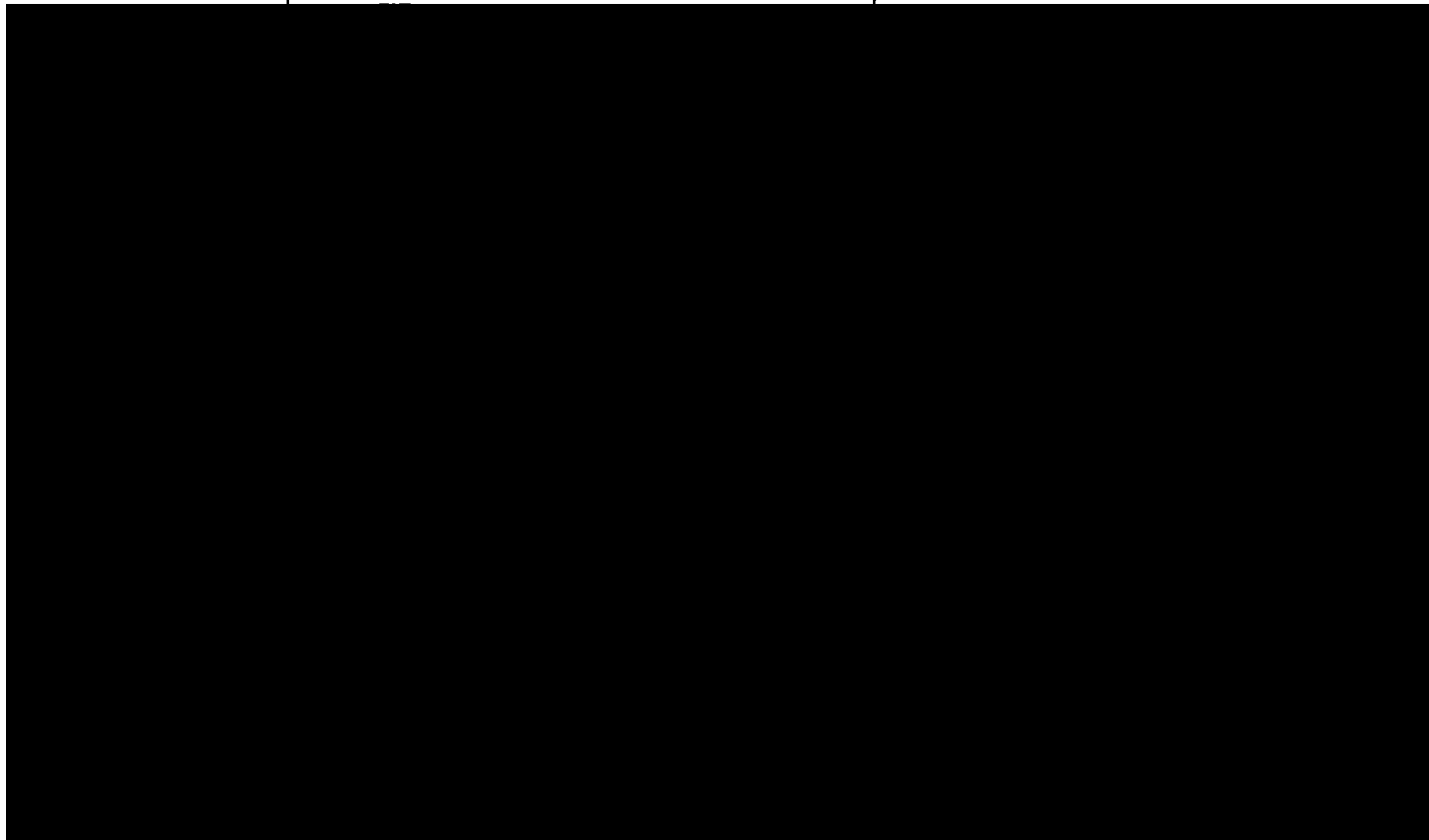
3. Under what conditions would you choose to use a histogram rather than a bar graph?

Answer: Use a histogram for quantitative data

4. Describe each figure below as a frequency polygon, histogram, or line graph.

a.

b.

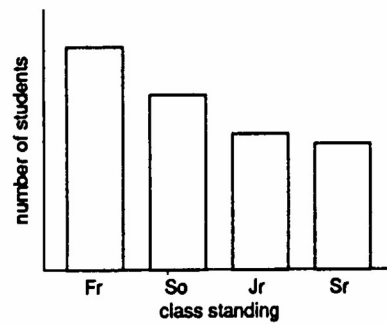


Answer:

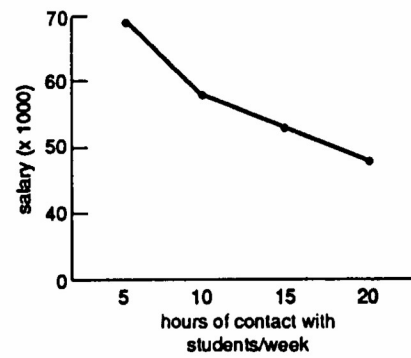
- | | | | | | |
|----|-------------------|----|-------------------|----|------------|
| a. | histogram | b. | frequency polygon | c. | line graph |
| d. | frequency polygon | e. | line graph | f. | line graph |

5. Identify each graph below as correct or incorrect. Describe what is wrong with each incorrect one.

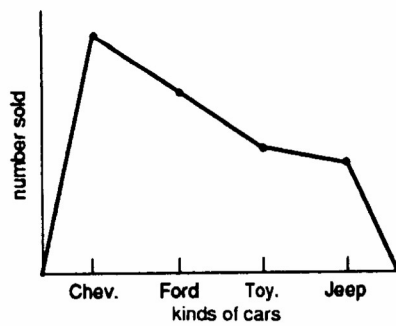
a.



b.



c.



d.

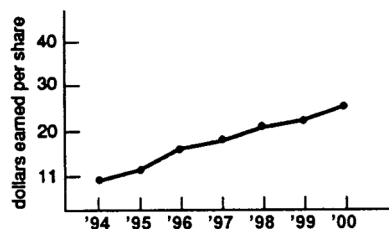


Answer:

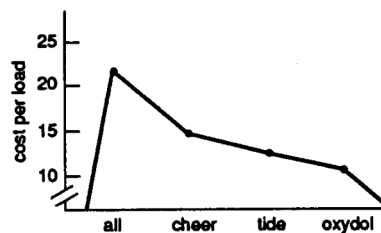
- a. Correct.
- b. Correct.
- c. Incorrect. It should be a bar graph because the X-axis is of a qualitative variable.
- d. Correct.

6. Describe each graph below as correct or incorrect. Tell what is wrong with the incorrect one(s).

a.



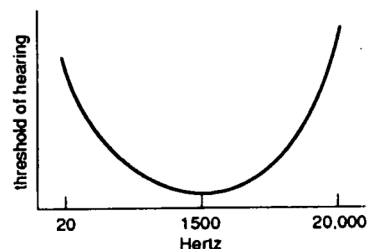
b.



c.



d.



Answer:

- a. Correct.
- b. Incorrect, qualitative data require a bar graph.
- c. Incorrect, qualitative data require a bar graph.
- d. Correct.

7. Identify the skew of each distribution below.

a.	$\frac{X}{f}$	b.	$\frac{X}{f}$	c.	$\frac{X}{f}$
	8 6		14 21		127 1
	7 14		13 20		126 2
	6 27		12 13		125 9
	5 61		11 8		124 5
	4 58		10 3		123 4
			0 1		122 3
					121 1

Answer: a. positive b. negative c. symmetrical or negative

8. Identify the skew of the two distributions below.

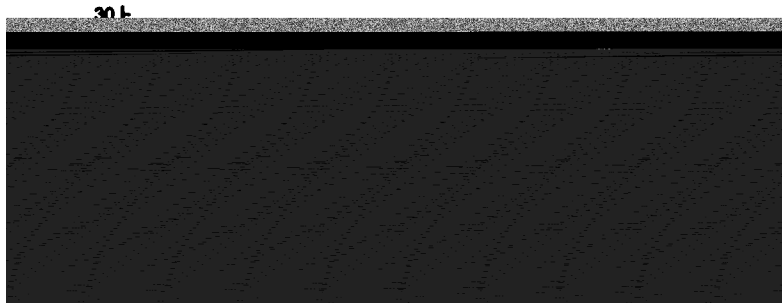
a. $\frac{X}{f}$	b. $\frac{X}{f}$
5 10	103 3
4 8	102 3
3 6	101 18
2 2	100 10
1 1	99 8
0 1	98 3
	97 2
	96 1
	95 1

Answer: a. negative b. negative

9. The cheerleaders at Rock Valley Tech had a problem. Spectator participation during yells was just terrible. They decided to find out which yells were unpopular and drop them from their repertoire. Accordingly, at the next game they passed out to the students a questionnaire designed to find out the most unpopular yell. (Since they knew that this question was not likely to be interesting by itself, they added other questions about the cheerleaders but these answers were ignored.) Five yells were named: Abba-dabba by 5 students, E. Coli by 12, Doggy by 27, Coatimonday by 23, Barse, Barse, Keya by 19. Arrange these data into a graph.

Answer:

A bar graph is appropriate.



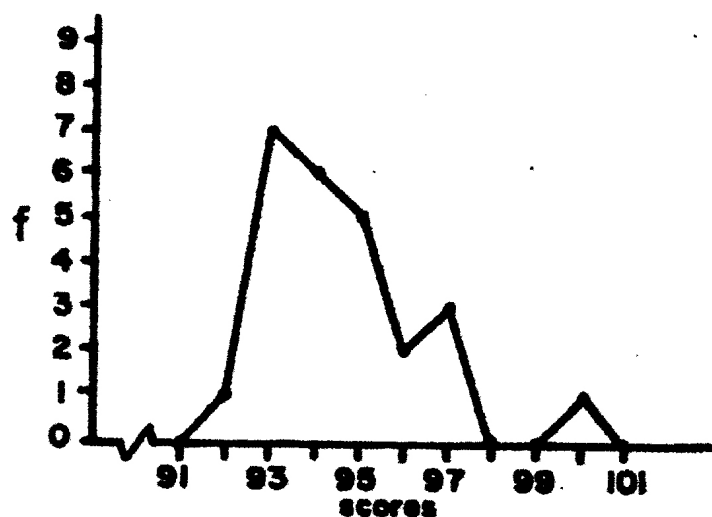
10. The numbers in this problem are senior-year averages for each of the 25 honor graduates at Psmallton High School. Arrange them into a simple frequency distribution, and draw a frequency polygon from the data. Tell the direction of the skew.

92 97 94 93 93 100 95 93 96 95 97 94
 94 96 97 93 95 93 94 95 93 94 95 94
 93

Answer:

X	f
100	1
99	0
98	0
97	3
96	2
95	5
94	6
93	7
92	1
$\Sigma = 25 \quad \Sigma fX = 2365$	

Skew is positive.

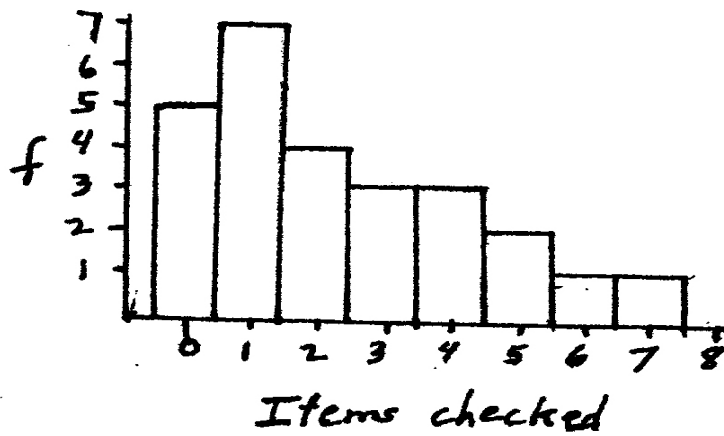


11. The administration at Warmfuzzy University gave a 7-item questionnaire to a representative sample of seniors. Each item was a statement of intention (recommend WU to others, return after graduation, give money, and so forth). The seniors simply checked the items they intended to do. A person's score was the sum of the items checked. Arrange the scores into a simple frequency distribution. Construct a histogram.

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

Answer:

X	f
7	1
6	1
5	2
4	3
3	3
2	4
1	7
0	5
$\Sigma = 26$	

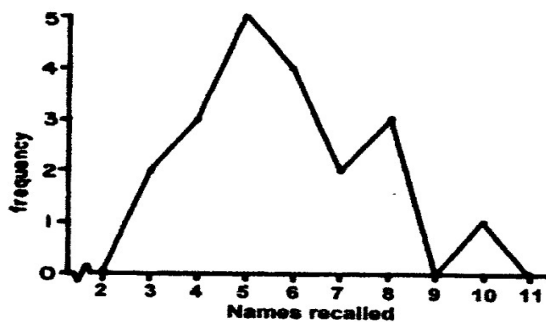


12. A group of American college students named as many of the 12 Canadian provinces and territories as they could. Arrange the scores into a simple frequency distribution. Draw a frequency polygon from the data.

8 6 5 5 10 7 7 4 3 5 3 6 8 6 8 5 6 5 4 4

Answer:

X	f
10	1
9	0
8	3
7	2
6	4
5	5
4	3
3	2
$\Sigma = 20$	



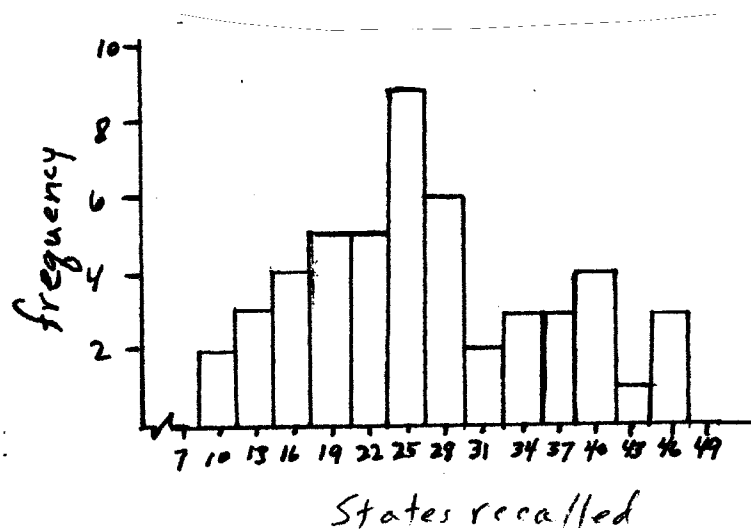
13. College students listed all the states in the USA that they could recall. The number each recalled is shown below. Arrange the counts into an appropriate frequency distribution, tell the direction of skew, if any, and construct a graph of the distribution. Use the class intervals that begin with 45 – 47 and end with 9 – 11.

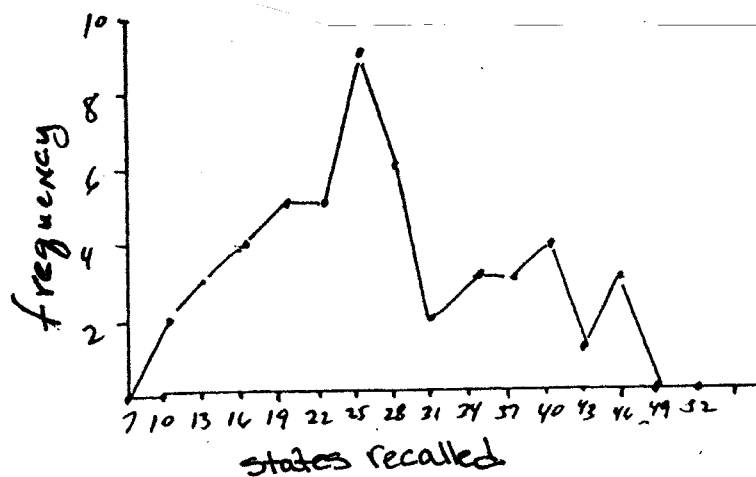
18	34	25	32	18	40	12	38	26	40
23	29	38	23	26	42	21	9	35	25
17	15	25	37	24	12	45	28	13	22
16	28	32	25	41	27	19	24	18	16
46	28	39	11	25	45	20	29	33	21

Answer:

States Recalled

(Class intervals)	Midpoint	<i>f</i>
45 – 47	46	3
42 – 44	43	1
39 – 41	40	4
36 – 38	37	3
33 – 35	34	3
30 – 32	31	2
27 – 29	28	6
24 – 26	25	9
21 – 23	22	5
18 – 20	19	5
15 – 17	16	4
12 – 14	13	3
9 – 11	10	2
		$\Sigma = 50$





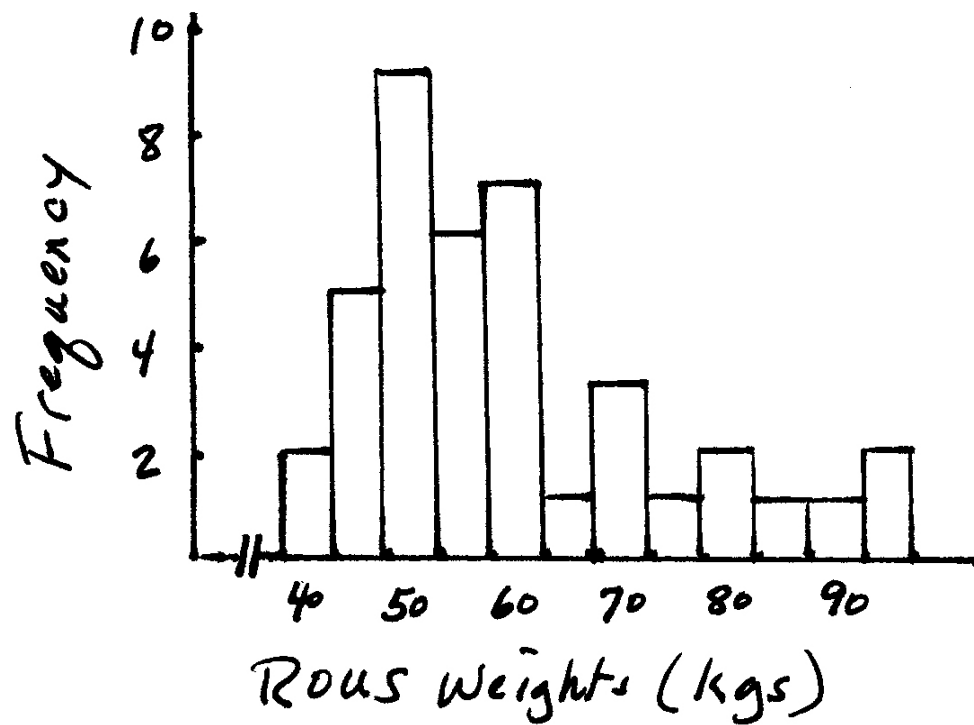
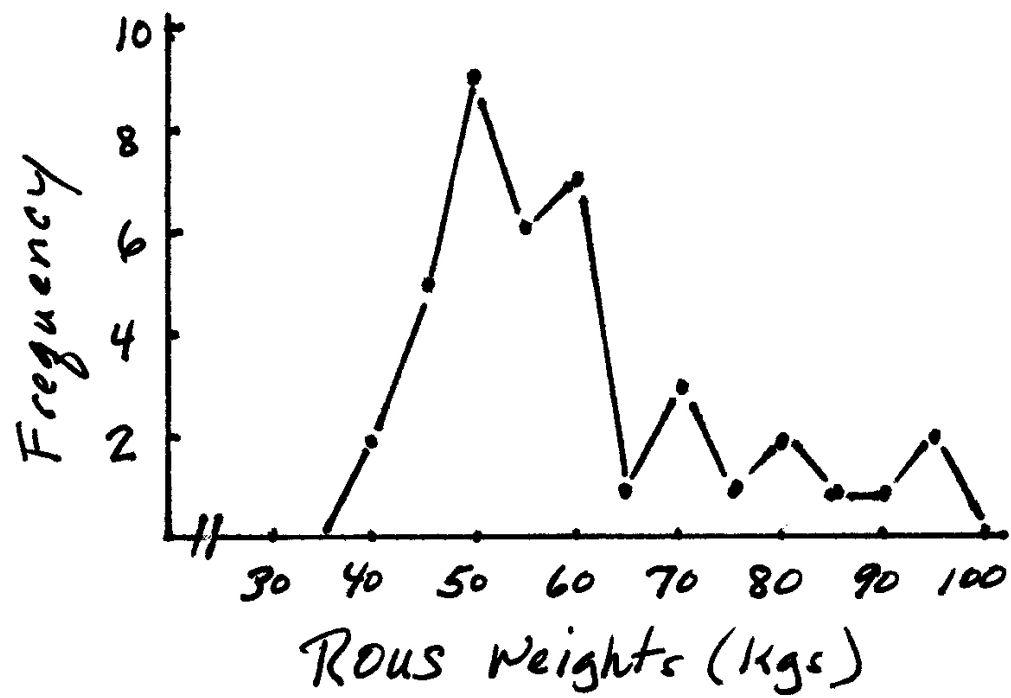
14. When Buttercup and Wesley were in the Fire Swamp, they were attacked by the largest mammals not yet known to modern science. How big were they, you ask? Fortunately, your brave instructor captured and weighed 40 of these Rodents of Unusual Size. Arrange the weights (kilograms) into an appropriate frequency distribution. Class intervals should begin with 93-97 and end with 38-42. Identify the skew, if any. Graph the distribution. (FYI: the largest recognized rodents, the South American capybara, weigh 40 kg. Beaver, the second largest, average 13 kg. Big male rats are about half a kilogram.)

51	72	68	54	62	49	95	46	85	76
65	59	60	51	53	50	39	56	81	59
44	59	49	70	89	78	38	60	48	44
51	52	55	44	61	50	97	43	54	57

Answer:

ROUS Weights

(Class intervals)	Midpoint	f
93 – 97	95	2
88 – 92	90	1
83 – 87	85	1
78 – 82	80	2
73 – 77	75	1
68 – 72	70	3
63 – 67	65	1
58 – 62	60	7
53 – 57	55	6
48 – 52	50	9
43 – 47	45	5
38 – 42	40	2



15. Among the legendary ranches in North America such as the Dragging y Cattle Ranch and the Four Sixes, some authors include the mythical Stats Bar-X Ranch, which has 100,000 acres. Using the data that follow, construct a graph. Naturally, a bar graph is called for.

Stats Bar-X 100,000	Dragging y 200,000	Four Sixes 300,000
Adams Ranch, 65,000	CS Cattle Company 150,000	Stuart Ranch 40,000

Answer:

