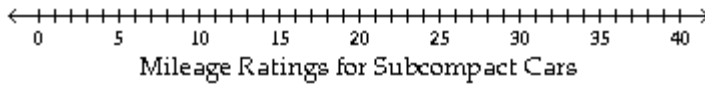


DIRECTIONS: Show all work on this paper.

Create the requested statistical graph.

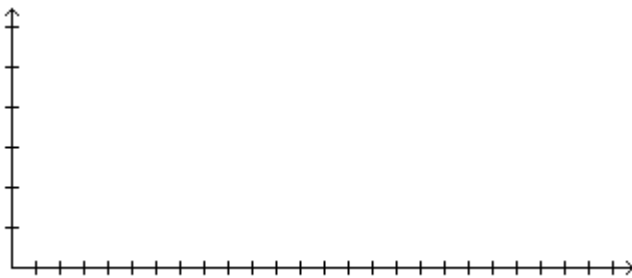
- 1) The mileage ratings for city driving of various subcompact cars are listed below. Construct a line plot using the data. 1) _____

27 28 10 26 34 27 21 20 19 25 17 29
 28 13 23 38 19 32 25 14 11 21 28 24



- 2) The numbers of male and female students in the College of Arts and Sciences are listed below by major. Make a double bar graph for the data. 2) _____

| Major | Number of Male Students | Major | Number of Female Students |
|---------|-------------------------|---------|---------------------------|
| Math | 100 | Math | 50 |
| History | 100 | History | 200 |
| English | 150 | English | 200 |
| Science | 150 | Science | 100 |
| Other | 75 | Other | 125 |

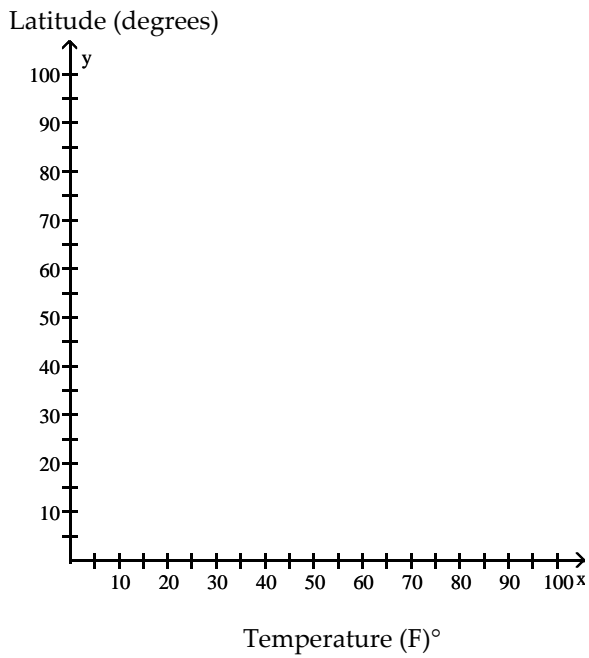


3) The one-day temperatures for 12 world cities along with their latitudes are shown in the table below. Make a scatterplot for the data.

3) _____

| City | Temperature (F) | Latitude |
|---------------------|-----------------|----------|
| Oslo, Norway | 30° | 59° |
| Seattle, WA | 57° | 47° |
| Anchorage, AK | 40° | 61° |
| Paris, France | 61° | 48° |
| Vancouver, Canada | 54° | 49° |
| London, England | 48° | 51° |
| Tokyo, Japan | 55° | 35° |
| Cairo, Egypt | 82° | 30° |
| Mexico City, Mexico | 84° | 19° |
| Miami, FL | 81° | 25° |
| New Delhi, India | 95° | 28° |
| Manila, Philippines | 93° | 14° |

Latitude versus One-Day Temperature



Use the figure to answer the question.

- 4) The weights (in pounds) of a group of high school students are listed below in a stem-and-leaf plot.

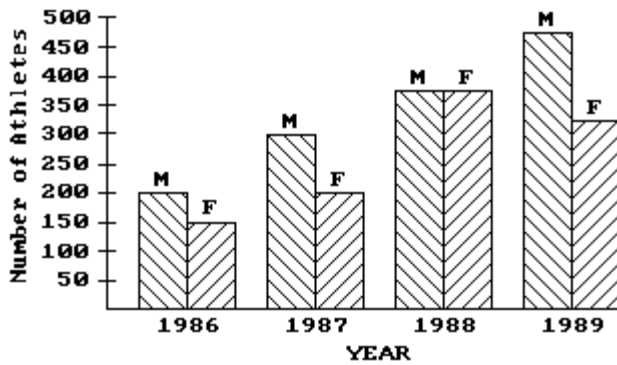
4) _____

| Stem | Leaves |
|------|-----------------|
| 9 | 8 9 |
| 10 | 1 4 6 7 8 |
| 11 | 0 2 4 4 6 8 |
| 12 | 3 5 8 9 |
| 13 | 0 0 2 4 6 7 8 9 |
| 14 | 1 2 2 2 5 7 8 |
| 15 | 1 6 7 9 |

What is the difference between the lowest and highest weights?

- 5) This double-bar graph shows the number of male (M) and female (F) athletes at a university over a four-year period.

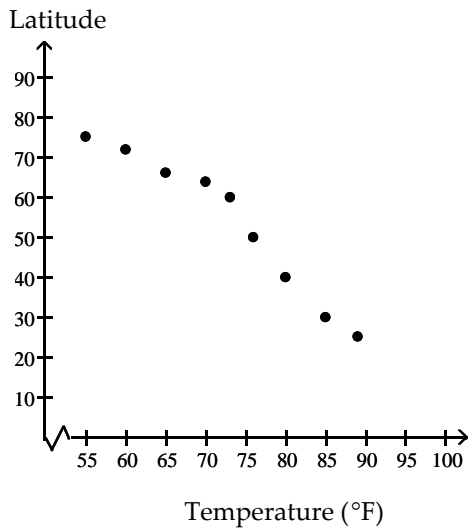
5) _____



Which year had the greatest number of male athletes?

6) The following scatterplot shows the temperature of a city and the city's latitude.

6) _____



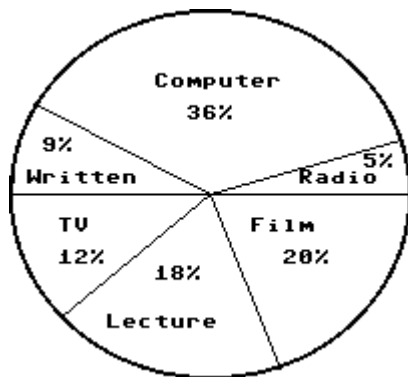
What type of correlation is there for this data?

- A) Positive correlation B) Negative correlation C) No correlation

Use the circle graph to solve the problem.

7) In a school survey, students showed these preferences for instructional materials.

7) _____



About how many students would you expect to prefer radio in a school of 850 students?

Find the mean, median, and mode. Round to the nearest tenth when necessary.

- 8) Given these test scores: Make sure that you label each answer.
13, 7, 8, 9, 10, 13, 8, 13

8) _____

Solve the problem.

- 9) The five sales people at Southwest Appliances earned commissions last year of \$12,000, \$21,000, \$36,000, \$20,000, and \$31,000. Find the mean commission.

9) _____

- 10) Bill needs an average of 80 on four tests in science to make the honor roll. What is the lowest score he can receive on the fourth test if his first three scores are 80, 89, and 90?

10) _____

- 11) A teacher allows the students to each "throw out" their lowest test score in order to increase their overall grade. The original mean score of 5 tests is 77.4. After the removal of the lowest test, the mean score becomes 83. What is the score of the removed test?

11) _____

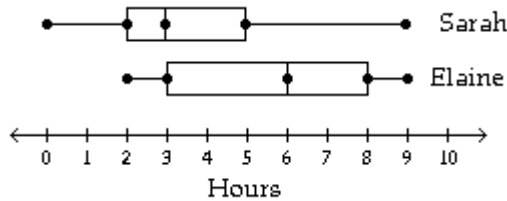
- 12) The owner of a small manufacturing plant employs six people. As part of their personnel file, she asked each one to record to the nearest one-tenth of a mile the distance they travel one way from home to work. The six distances are listed below:
 2.4 5.9 1.5 4.9 6.2 3.5
 Compute the range.

12) _____

Provide an appropriate response.

- 13) Following are box-and-whisker plots comparing the study times in hours per week for Sarah and Elaine.

13) _____



Describe any similarities or differences in the two distributions represented by the boxplots.

Solve the problem.

- 14) Given the following data, find the variance and the standard deviation. Round your answer to the nearest **tenth**.

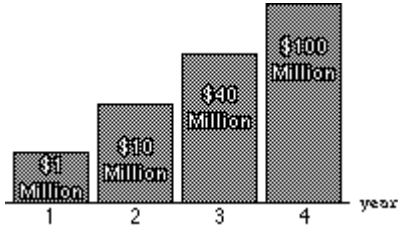
14) _____

25, 34, 22, 41, 30, 27, 31, 36

Identify the abuse of statistics.

15) The graph shows the increases in a certain expenditure over a four-year period. What is wrong with the graph?

15) _____



16) An airline company advertises that 100% of their flights are on time after checking 5 randomly selected flights and finding that these 5 were on time. What is wrong with this?

16) _____

17) A company accused of downsizing workers defended itself with the following statement "Yes, we were forced to lay off 20% of our workforce last year, but this year we increased our workforce by 20% and we therefore now have the same number of employees as before the layoff." What is the flaw in this argument?

17) _____

Answer the following question.

- 18) The weights of a class of sixth grad children are given below. Construct a frequency distribution with a first class of 60–70. 18) _____

| | | | | |
|----|----|-----|-----|-----|
| 62 | 79 | 89 | 101 | 104 |
| 62 | 80 | 91 | 101 | 107 |
| 70 | 80 | 91 | 102 | 108 |
| 73 | 80 | 95 | 102 | 110 |
| 75 | 82 | 95 | 103 | 125 |
| 76 | 84 | 96 | 103 | 126 |
| 76 | 88 | 100 | 103 | 146 |

- 19) Consider the following set of data which shows the number of sit ups students completed in a freshman P.E. class in the months of September and December. use this information to construct an ordered back to back stem and leaf plot. 19) _____

| SEPTEMBER | | | | | DECEMBER | | | | |
|-----------|----|----|----|----|----------|----|----|----|----|
| 55 | 19 | 15 | 13 | 50 | 70 | 30 | 27 | 32 | 60 |
| 53 | 12 | 4 | 14 | 34 | 63 | 20 | 10 | 15 | 40 |
| 7 | 50 | 28 | 20 | 19 | 7 | 50 | 32 | 27 | 23 |
| 10 | 19 | 17 | | | 19 | 29 | 27 | | |

- 20) Tom's median score on his four tests was 89. His mode was 89 and his range was 22. If his mean was 86, what were his four test scores? 20) _____

- 21) The mean salary of 8 people in the room was \$32,000. Three new employees were hired at salaries of \$36,000, \$22,000 and \$49,000. What is the mean salary of the employees now? 21) _____

Use the following information for problems 23–25.

| | | | | | | | | | |
|-----|----|----|----|----|----|----|----|----|----|
| 110 | 88 | 90 | 83 | 89 | 84 | 25 | 81 | 83 | 96 |
| 76 | 76 | 93 | 86 | 75 | | | | | |

- 22) Find the median, lower quartile, and upper quartile. Label each answer. 22) _____

23) Find the interquartile range for the data. Are there any outliers for the data? If so what are they? Show work to justify your answer.

23) _____

24) Construct a box plot.

24) _____

Answer the following question.

25) Write the letters of the words AVERAGE, HOSPITAL, PURPOSE, HAPPINESS, and HOPE in the squares on the strips of graph paper below. Without doing any arithmetic, explain how you can find the mean, median, and mode of the number of letters in the above words.

25) _____

| | | | | | | |
|--|--|--|--|--|--|--|
| | | | | | | |
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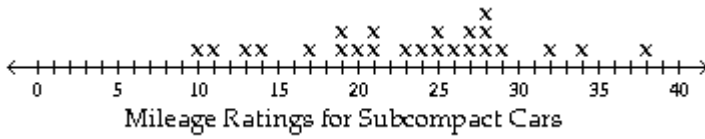
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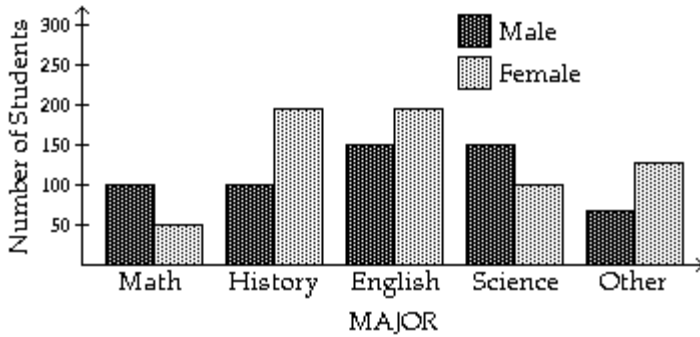
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Answer Key
 Testname: EXAM4A

1)

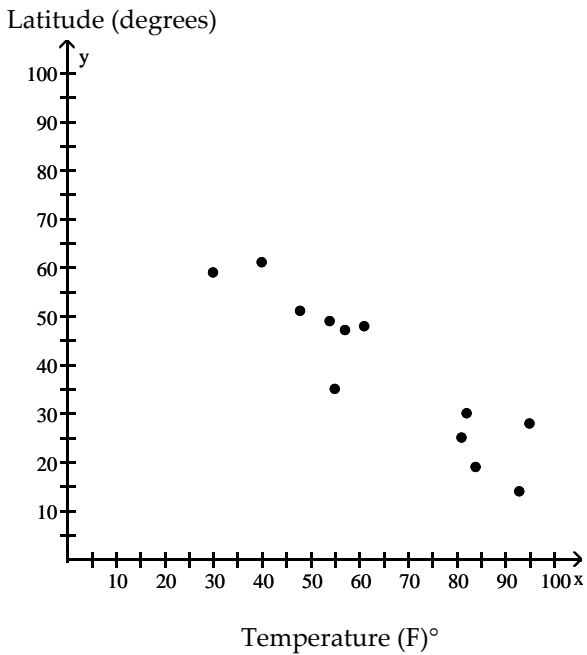


2)



3)

Latitude versus One-Day Temperature



- 4) 61
- 5) 1989
- 6) B
- 7) About 43 students
- 8) 10.1, 9.5, 13
- 9) \$24,000
- 10) 61
- 11) 55
- 12) 4.7
- 13) Answers will vary. One example The maximum number of hours studied by either was 9 hours.
- 14) 33.4, 5.78
- 15) The bars are not drawn in the correct proportions.

Answer Key

Testname: EXAM4A

16) The sample was too small.

17) Answers will vary. Possible answer: This is a misleading use of percentages as 20% of the reduced workforce is smaller than 20% of the original workforce. The company therefore did not hire as many new workers as it originally laid off. The current workforce size is smaller than the size of the workforce before the layoffs.

18)

19)

20) 72, 89, 89, 94

21) \$33,000

22) 84, median 76 lower quartile, 90 upper quartile

23) $IQR = 90 - 76 = 14$

$$14(1.5) = 21$$

$$76 - 21 = 55 \quad 90 + 21 = 111 \quad 25 \text{ is an outlier}$$

24)

25) various