

Name \_\_\_\_\_

# Advanced Functions and Modeling

## Unit 8 - Test

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

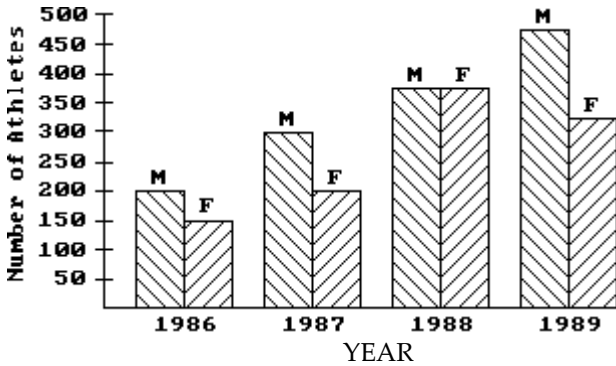
**Solve the problem.**

- 1) A tennis promoter is comparing two brands of tennis ball to determine which one gives a faster serve. The following data represent the top speeds (in mph) clocked by comparable players using each ball. Represent the two sets of data on a single stem-and-leaf display. 1) \_\_\_\_\_

Which ball, if either, seems to give a faster serve?

Ball A: 68, 76, 94, 74, 93, 70, 71, 86,      Ball B: 66, 86, 84, 92, 96, 89, 73, 71,  
66, 92, 64, 62, 76, 85, 83, 69              91, 67, 87, 93, 73, 89, 93, 69

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

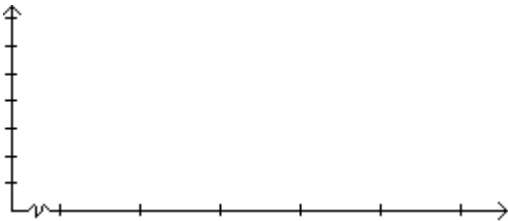


- 2) Which year had the smallest number of female athletes? 2) \_\_\_\_\_

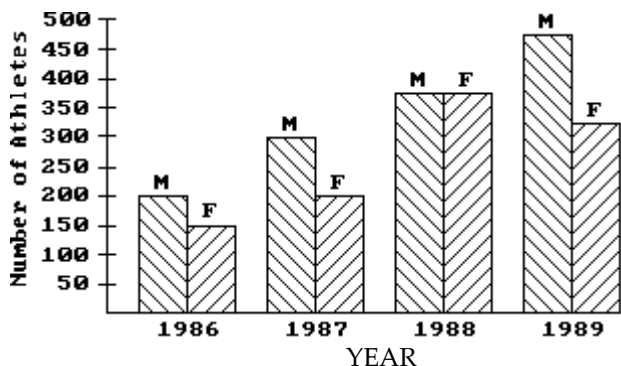
**Construct the specified histogram.**

- 3) The students in Mrs. Logan's Spanish class received the following scores on a test. Construct a histogram to represent the data. Use 4 classes with a class width of 10 and begin with a lower class boundary of 59.5 3) \_\_\_\_\_

75 94 87 83 78 72 65 75 82 78 97 72 87 94 72 83 87 95 85 97 69



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



- 4) What is the only year in which the number of female athletes declined from its previous value? 4) \_\_\_\_\_

**Solve the problem.**

- 5) A doctor is comparing two different drugs to determine which is more effective at lowering cholesterol. The following data represent, for each drug, the drop in cholesterol over a three-month period for comparable patients. Represent the two sets of data on a single stem-and-leaf display. Which drug, if either, seems to be more effective? 5) \_\_\_\_\_

Drug A: 21, 11, 25, 40, 34, 14, 33, 16,      Drug B: 27, 42, 46, 37, 44, 32, 33, 53,  
 31, 50, 11, 33, 44, 17, 30, 26                      42, 29, 57, 54, 49, 48, 12, 26

**Construct a box-and-whisker plot for the given data.**

- 6) The test scores of 40 students are listed below. 6) \_\_\_\_\_

25 35 43 44 47 48 54 55 56 57  
 59 62 63 65 66 68 69 69 71 72  
 72 73 74 76 77 77 78 79 80 81  
 81 82 83 85 89 92 93 94 97 98

**Solve the problem.**

- 7) Assume that in your psychology class you have earned the following test scores: 99, 90, 60, 79; and only one test remains. If you need a mean score of 80 to earn a "B", then what minimum score must you obtain on the last test? 7) \_\_\_\_\_
- 8) Assume that in a 31-day month you begin with a \$30 balance due on your credit card, charge an item for \$150 on the 15th and an item for \$60 on the 20th of the month. What is your average daily balance on your credit card for this month? 8) \_\_\_\_\_

**Solve the problem. Round to the nearest hundredth, if necessary.**

- 9) A major league baseball player got the following number of hits during each year of his career: 55, 112, 180, 179, 187, 189, 190, 193, 158, 145, 151, 139, 116, 40. What is the mode of the data? 9) \_\_\_\_\_
- 10) The following data gives the number of applicants that applied for a job at a given company each month of 1999: 64, 67, 96, 77, 79, 80, 86, 88, 90, 96, 73, 64. What is the mode of the data? 10) \_\_\_\_\_

**Find the standard deviation. Round to one more place than the data.**

11) 2, 2, 16, 13, 19, 10, 9, 5, 16

11) \_\_\_\_\_

12) 110, 145, 129, 196, 156, 133, 100, 108, 203

12) \_\_\_\_\_

**Find the range for the set of data given.**

13) 5 17 2 14 12

13) \_\_\_\_\_

**Solve the problem. Round to the nearest hundredth, if necessary.**

14) Assume that the professor in a class assigns grades based on the following:

14) \_\_\_\_\_

A: scores which are 1.5 or more standard deviations above the mean.

B: scores which are between 0.5 and 1.5 standard deviations above the mean.

C: scores which are between 0.5 standard deviations below the mean and 0.5 standard deviations above the mean.

D: scores which are between 0.5 and 1.5 standard deviations below the mean.

F: scores which are 1.5 or more standard deviations below the mean.

The scores in the class are 85, 78, 95, 81, 70, 88, 84, 90, 68, 74. What grade does the person earning the 84 get?

**Find the standard deviation. Round to one more place than the data.**

15) 17, 12, 18, 19, 19, 12, 10, 7, 11

15) \_\_\_\_\_

**Solve the problem.**

16) Assume that math SAT scores are normally distributed with a mean of 500 and a standard deviation of 100. If you scored 560, what percentage of those taking the test scored below you?

16) \_\_\_\_\_

17) Assume that the distribution of wait times spent by women in a restroom line at a sporting event is 6.3 minutes with a standard deviation of 1.3 minutes. For this distribution, find a raw score that corresponds to a z-score of 1.7.

17) \_\_\_\_\_

**Use a table to find the percentage of the area under the standard normal curve between the two values. Round your answer to the nearest tenth.**

18)  $z = 0$  and  $z = -2.62$

18) \_\_\_\_\_

**Use a table to find a z-score that fits the given conditions. Interpolate if necessary.**

19) 33% of the area under the standard normal curve is above the score.

19) \_\_\_\_\_

20) 48% of the area under the standard normal curve is above the score.

20) \_\_\_\_\_

# Answer Key

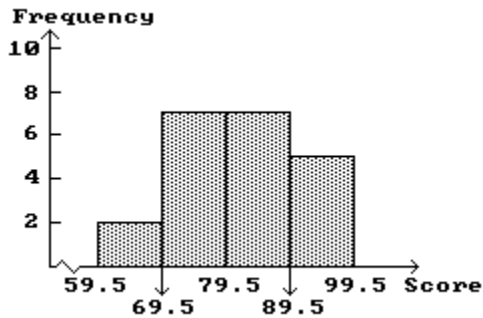
Testname: UNTITLED1

1) Ball A	Ball B
9 8 6 4 2	6   6 7 9
6 6 4 1 0	7   1 3 3
6 5 3	8   4 6 7 9 9
4 3 2	9   1 2 3 3 6

Ball B seems to give a faster serve.

2) 1986

3)

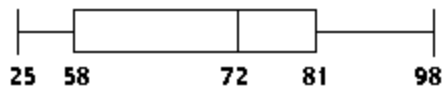


4) 1989

5) Drug A	Drug B
7 6 4 1 1	1   2
6 5 1	2   6 7 9
4 3 3 1 0	3   2 3 7
4 0	4   2 2 4 6 8 9
0	5   3 4 7

Drug B seems to be more effective.

6)



7) 72

8) \$135.48

9) There is no mode.

10) 96 and 64

11) 6.3

12) 37.1

13) 15

14) C

15) 4.4

16) 72.6%

17) 8.51

18) 49.6%

19) 0.44

20) 0.05