

Test 5 Sample Questions

The exercise presents numerical information. Describe the population whose properties are analyzed by the data.

1) There were 531 crimes in a certain city per 100,000 residents.

1) _____

A) criminals in the city

B) residents of the country

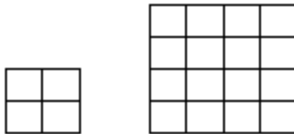
C) criminals in the country

D) residents of the city

Describe the error in the visual display shown.

2)

2) _____



The volume of our sales has doubled!!!

A) There is no error.

B) The length of a side has doubled, but the area has been multiplied by 8.

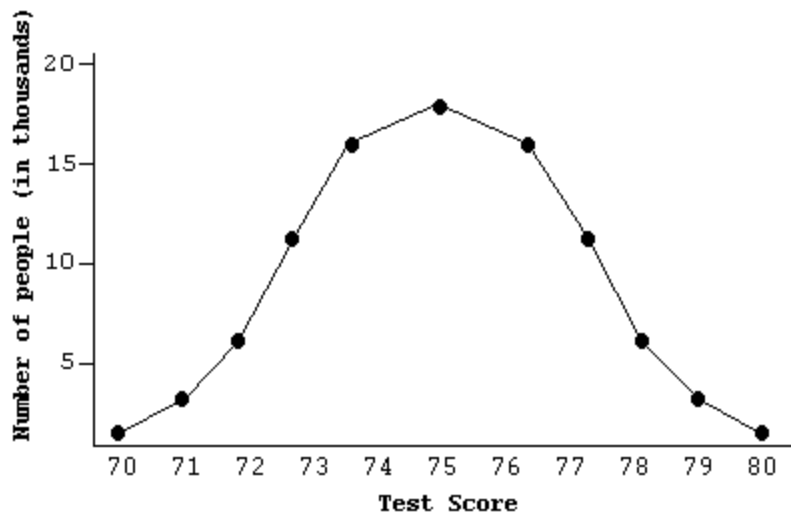
C) The length of a side has doubled, but the area has been multiplied by 4.

D) The length of a side has doubled, but the area has been unchanged.

Solve the problem.

3) The frequency polygon below shows a distribution of test scores.

3) _____



Which one of the following is true based on the graph?

A) The graph is based on a sample of approximately 15 thousand people.

B) The percent of scores above any given score is equal to the percent of scores below that score.

C) More people had a score of 77 than a score of 73.

D) More people had a score of 75 than any other, and as the deviation from 75 increases or decreases, the scores fall off in a symmetrical manner.

4) Construct a histogram and a frequency polygon for the given data.

4) _____

Years of Education Beyond High School	Number of People (thousands)
1	23
2	13
3	12
4	14
5	4
6	2

5) The government of a town needs to determine if the city's residents will support the construction of a new town hall. The government decides to conduct a survey of a sample of the city's residents. Which one of the following procedures would be most appropriate for obtaining a sample of the town's residents?

5) _____

- A) Survey a random sample of employees at the old city hall.
- B) Survey the first 400 people listed in the town's telephone directory.
- C) Survey every 12th person who walks into city hall on a given day.
- D) Survey a random sample of persons within each geographic region of the city.

Find the mean for the data items in the given frequency distribution. Round to the nearest hundredth, if necessary.

6)

6) _____

Score	Frequency
x	f
1	4
2	2
3	5
4	7
5	10
6	6
7	9
8	11
9	12
10	12

- A) 6.62 B) 5.23 C) 8 D) 6

Solve the problem.

7) Six people from different occupations were interviewed for a survey, and their annual salaries were as follows: \$12,000, \$20,000, \$25,000, \$37,000, \$67,500 and \$125,000. What is the median annual salary for the six people?

7) _____

Find the midrange for the group of data items.

8) 11, 8, 4, 8, 2, 4, 2

- A) 9.5 B) 6.5 C) 5 D) 7.5

8) _____

Find the mode for the group of data items. If there is no mode, so state.

9) 97, 97, 94, 47, 71, 97

- A) 97 B) no mode C) 94 D) 47

9) _____

Find the range for the group of data items.

10) 15, 15, 15, 17, 24, 24, 24

A) 17

B) 2

C) 9

D) 39

10) _____

A group of data items and their mean are given. Find a. the deviation from the mean for each of the data items and b. the sum of the deviations in part a.

11) 69, 69, 71, 74, 74, 74, 75, 76, 79, 79; Mean = 74

A) -5, -5, -3, 0, 0, 0, 1, 2, 5, 5; 0

B) -5, -5, -3, 0, 0, 0, 1, 2, 5, 5; 26

C) 5, 5, 3, 0, 0, 0, 1, 2, 5, 5; 26

D) 5, 5, 3, 0, 0, 0, 1, 2, 5, 5; 0

11) _____

Find the standard deviation for the group of data items.

12) 11, 18, 11, 18, 11, 18, 11, 18

A) $\frac{49}{4}$

B) $\frac{7\sqrt{2}}{\sqrt{7}}$

C) $\frac{7}{2\sqrt{7}}$

D) 49

12) _____

A set of data items is normally distributed with a mean of 60. Convert the data item to a z -score, if the standard deviation is as given.

13) data item: 0; standard deviation: 16

A) -3.75

B) -16

C) 16

D) 3.75

13) _____

Solve the problem.

14) The combined SAT scores of the freshman class at a particular university are normally distributed with a mean of 1000 and a standard deviation of 100. What percentage of the freshmen class had combined SAT scores above 1110?

14) _____

A set of data items is normally distributed with a mean of 60. Convert the data item to a z -score, if the standard deviation is as given.

15) data item: 100; standard deviation: 10

A) 40

B) $\frac{3}{2}$

C) 4

D) 10

15) _____

The scores on a driver's test are normally distributed with a mean of 100. Find the score that is:

16) Find the score that is 3 standard deviations above the mean, if the standard deviation is 26.

A) 103

B) 178

C) 152

D) 126

16) _____

Provide an appropriate response.

17) True or False? In a bell curve distribution, the median is less than the mean and is located to the left of the mean on the graph of the distribution.

A) True

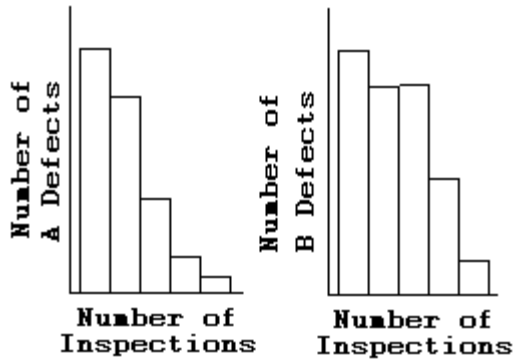
B) False

17) _____

Use the histograms shown to answer the question.

18)

18) _____



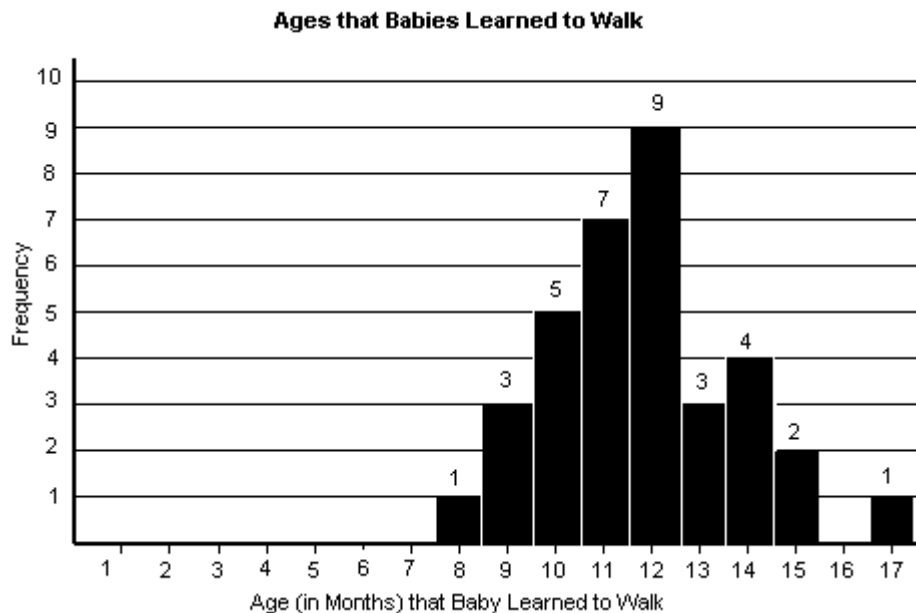
Can the number of A defects or the number of B defects be described using the normal distribution?

- A) The second is normal, but the first is not normal.
- B) The first is normal, but the second is not normal.
- C) Both are normal.
- D) Neither is normal.

Solve the problem.

- 19) The histogram shows the ages (in months) that babies learned to walk. Use this histogram to solve the problem.

19) _____



- (i) Find the median age that a baby learned to walk.
 - (ii) Find the third quartile by determining the median of the upper half of the data.
- A) (i) median = 11;
(ii) first quartile = 12
 - B) (i) median = 12;
(ii) third quartile = 13
 - C) (i) median = 12.5;
(ii) first quartile = 13
 - D) (i) median = 11.5;
(ii) first quartile = 12.5

Provide an appropriate response.

- 20) If an adult male is told that his height is 3 standard deviations above the mean of the normal distribution of heights of adult males, what can he assume? 20) _____
- A) He is taller than about 95% of the other men whose heights were measured.
B) His height measurement is in the same range as about 99.7% of the other adult males whose heights were measured.
C) He is taller than about 99.7% of the other men whose heights were measured.
D) His height measurement is in the same range as about 95% of the other adult males whose heights were measured.

Solve the problem.

- 21) A media research company increased the size of their random samples from 4100 to 4600. By how much, to the nearest tenth of a percent, did this improve their margin of error? 21) _____
- A) 3% B) 1.6% C) 0.1% D) 1.5%

Suppose that prices of a certain model of new homes are normally distributed with a mean of \$150,000. Use the 68–95–99.7 rule to find the percentage of buyers who paid:

- 22) between \$150,000 and \$157,500 if the standard deviation is \$2500. 22) _____
- A) 34% B) 49.85% C) 47.5% D) 99.7%

Use the table of z-scores and percentiles to find the percentage of data items in a normal distribution that lie a. above and b. below the given score.

- 23) $z = 0.3$ 23) _____
- A) 38.21%, 61.79% B) 61.79%, 61.79% C) 0%, 100% D) 61.79%, 38.21%

Test scores are normally distributed with a mean of 500. Convert the given score to a z-score, using the given standard deviation. Then find the percentage of students who score:

- 24) below 650 if the standard deviation is 100. 24) _____
- A) 93.32% B) 6.68% C) 56.68% D) 100%

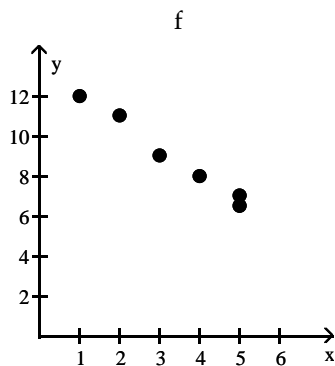
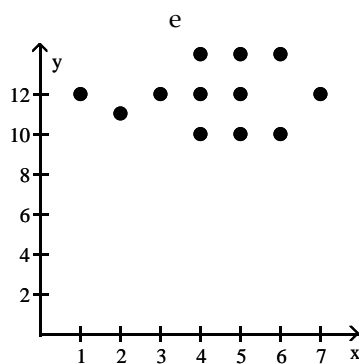
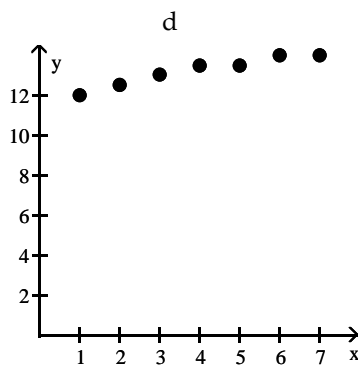
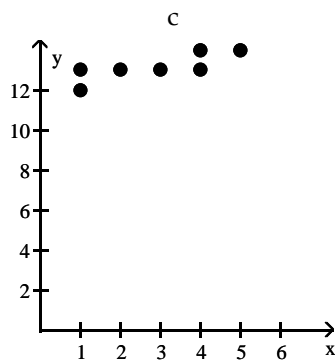
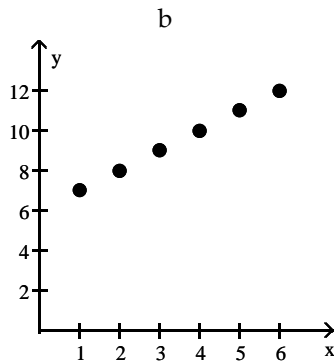
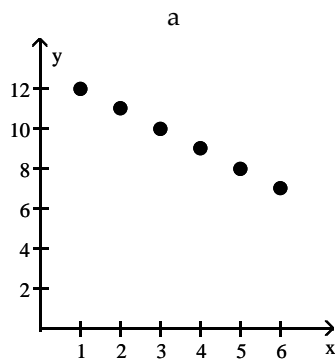
Compute r , the correlation coefficient, rounded to the nearest thousandth, for the following data:

- 25) 25) _____
- | | | | | | | |
|---|----|----|----|----|----|----|
| x | 5 | 10 | 8 | 7 | 11 | 6 |
| y | 12 | 15 | 13 | 13 | 14 | 11 |
- A) -0.855 B) -0.9 C) 0.9 D) 0.855

Use the scatter plots shown, labelled a through f to solve the problem.

26)

26) _____



Which scatter plot indicates a perfect negative correlation?

A) c

B) f

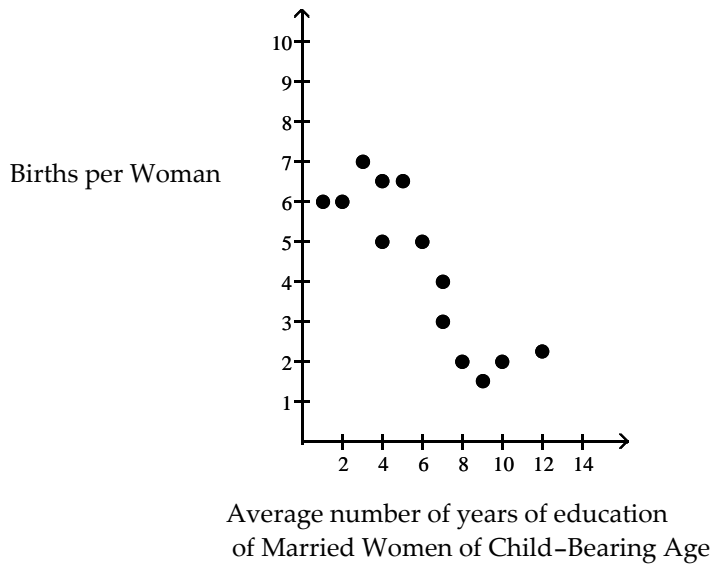
C) a

D) b

The scatter plot shows the relationship between average number of years of education and births per woman of child bearing age in selected countries. Use the scatter plot to determine whether the statement is true or false.

27)

27) _____



There is a strong positive correlation between years of education and births per woman.

A) False

B) True

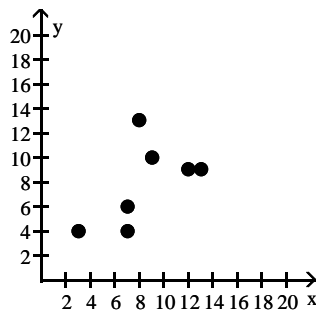
Make a scatter plot for the given data. Use the scatter plot to describe whether or not the variables appear to be related.

28)

28) _____

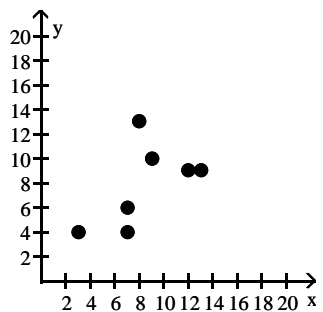
Subject	A	B	C	D	E	F	G
Time watching TV	10	6	4	9	9	7	8
Time on Internet	9	7	3	12	13	4	13

A)



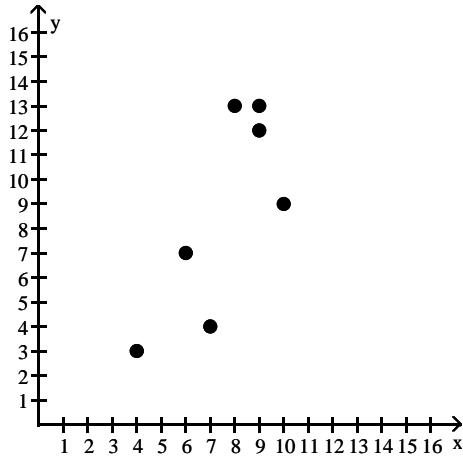
The variables appear to be related.

B)



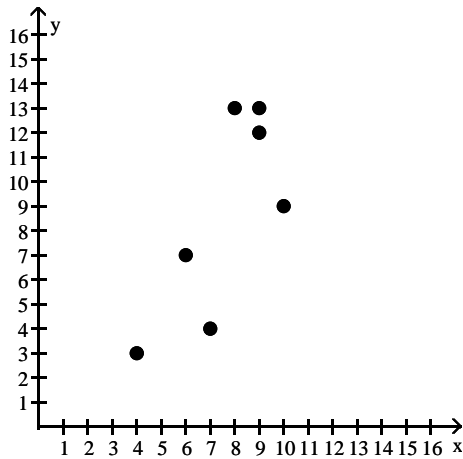
The variables do not appear to be related.

C)



The variables do not appear to be related.

D)



The variables appear to be related.

The correlation coefficient, r is given for a sample of n data points. Use the $\alpha = 0.05$ column in a correlation significance table to determine whether or not we may conclude that a correlation does exist in the population.

29) $n = 37$ $r = -0.301$

29) _____

A) No, we can not conclude that there is a correlation.

B) Yes, we can conclude that there is a correlation.

Solve the problem.

30) The data show the number of felony convictions, in hundreds, and the crime rate, in crimes per 100,000, for seven randomly selected states. For the given data, a. determine the correlation coefficient between the number of felony convictions and the crime rate, (b) find the equation of the regression line, (c) approximate what crime rate can we anticipate in a state that has 12 hundred felony convictions.

30) _____

Felony convictions 11.4 8.1 6.7 3.4 2.4 2.3 0.4

Crime rate /100,000 12 9.5 10.4 9 4.2 5.5 3.3

A) a. $r = 0.906$ b. $y = 3.85x + 0.777$ c. 47

B) a. $r = -0.906$ b. $y = 0.777x - 3.85$ c. 5.5

C) a. $r = -0.906$ b. $y = -0.777x + 3.85$ c. 5.5

D) a. $r = 0.906$ b. $y = 0.777x + 3.85$ c. 13.2