

TEST NAME: **S-ID.8**
TEST ID: **844128**
GRADE: **09 - Ninth Grade**
SUBJECT: **Mathematics**
TEST CATEGORY: **School Assessment**

Student: _____

Class: _____

Date: _____

1. A correlation coefficient, r , was found to be -0.79 for a set of variables, x and y . What is the best interpretation of the coefficient?
 - A. The value of x does not vary with the value of y .
 - B. The value of x decreases when the value of y decreases.
 - C. The value of x increases as the value of y decreases.
 - D. The value of x increases when the value of y increases.

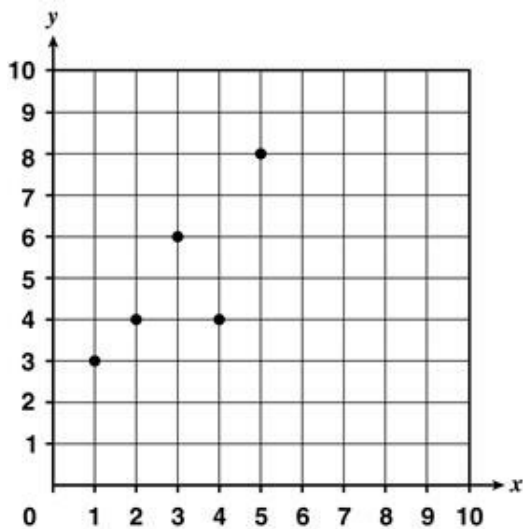
2. Jim compared the number of songs on six of his CDs to the length of the CDs in minutes. The table below shows the results.

Number of Songs (x)	Length of CD (y)
5	14.2 minutes
15	42.6 minutes
12	34.5 minutes
13	39.5 minutes
12	34.2 minutes
14	42.4 minutes

Which conclusion can be made based on the correlation coefficient of the line of best fit for the data?

- A. There is a strong positive correlation between the number of songs and the length of the CD.
- B. There is a strong negative correlation between the number of songs and the length of the CD.
- C. There is a weak positive correlation between the number of songs and the length of the CD.
- D. There is a weak negative correlation between the number of songs and the length of the CD.

3. Consider the graph below.



Which correlation coefficient and interpretation best represent the given points?

- A. 0.625, no correlation
 - B. 0.791, no correlation
 - C. 0.625, positive correlation
 - D. 0.791, positive correlation
4. The table below shows the number of hours Tammy worked during 5 days and the amount of tips she earned.

Hours Worked (x)	Tips Earned (y)
6	\$71
7	\$90
8	\$82
4	\$26
6	\$55

Which **best** describes the relationship between the amount of tips Tammy earned and the number of hours she worked?

- A. strong positive correlation
- B. strong negative correlation
- C. weak positive correlation
- D. weak negative correlation

5. A car dealer recorded the selling prices of his used cars in 2005. The table below shows the average selling prices based on the age of the cars.

Prices of Used Cars

Age of Car (years)	Selling Price (in thousands)
1	\$20
2	\$18
3	\$17
4	\$15
5	\$10
6	\$7

Which best describes the correlation between the age of the car and the selling price of the car?

- A. variable correlation
 - B. negative correlation
 - C. no correlation
 - D. positive correlation
6. What is the **approximate** correlation coefficient of the linear best-fit model for the data set shown below?

x	y
5	25
10	80
7	90
20	220
30	440
40	520
50	630
60	730
70	900
35	400
55	820
45	790

- A. 0.9083
- B. 0.9468
- C. 0.9577
- D. 0.9707

7. The data in the table can be entered into a calculator to determine a linear equation of best fit where x represents the year and y represents the sales of Product M in dollars.

**Sales of Product M
for the Month of June**

Year, x	Sales (\$), y
1	923
2	900
3	1,521
4	827
5	1,620
6	1,325
7	2,314
8	1,535
9	900
10	1,032

What conclusion can be drawn from the correlation coefficient?

- A. There is a weak positive correlation between the variables.
 - B. There is a weak negative correlation between the variables.
 - C. There is a strong positive correlation between the variables.
 - D. There is a strong negative correlation between the variables.
8. The table below shows the number of floors and heights of 4 buildings in a city.

Number of Floors (x)	Height (y)
24	246 feet
27	277 feet
28	282 feet
30	296 feet

What is the **approximate** correlation coefficient of the line of best fit for the data?

- A. 0.9946
- B. 0.9908
- C. 0.9856
- D. 0.9818

9. The table below shows the height of a plant at different amounts of time since it was planted.

Time (weeks)	Height (cm)
1	1
2	4
3	6
4	9
5	11

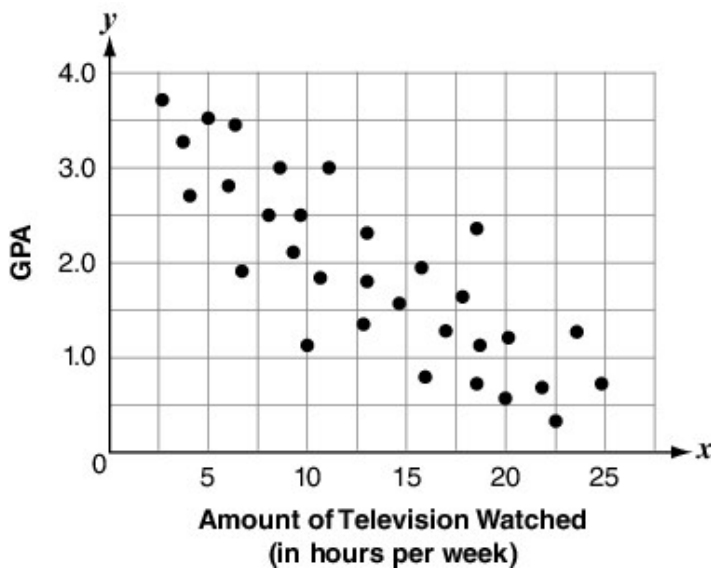
Which **best** describes the correlation between plant height and time?

- A. weak negative correlation
 - B. weak positive correlation
 - C. strong negative correlation
 - D. strong positive correlation
10. Which statement **best** describes the association of two data sets with a correlation coefficient of -1 ?
- A. The data sets have a weak positive association.
 - B. The data sets have a weak negative association.
 - C. The data sets have a strong positive association.
 - D. The data sets have a strong negative association.

11. Which **best** describes the relationship between x and y for the values in the table below?

x	y
0	-3
2	-2
3	0
5	3
6	5

- A. weak negative correlation
B. weak positive correlation
C. strong negative correlation
D. strong positive correlation
12. The scatter plot below shows data that were collected to compare the amount of television a student watched (hours per week) and his or her GPA.



Which of these would be a reasonable correlation coefficient for these data?

- A. -0.8
B. -0.2
C. 0.2
D. 0.8

13. The data in the table can be entered into a calculator to determine a linear equation of best fit where x represents the elapsed time in minutes and y represents the depth of water in a tub in inches.

Water Depth in Tub

Elapsed Time, x (minutes)	Depth, y (inches)
3	10
3.5	9
4	8
4.5	7
5	6
5.5	5
6	4
6.5	3
7	2
7.5	1
8	0

What conclusion can be drawn from the correlation coefficient?

- A. There is a weak positive correlation between the variables.
- B. There is a weak negative correlation between the variables.
- C. There is a strong positive correlation between the variables.
- D. There is a strong negative correlation between the variables.

14. The table below shows the scores of 7 students on a math and science test.

TEST SCORES

Math Scores	Science Scores
88	75
76	68
84	75
86	80
92	78
86	84
88	76

What is the value of the correlation coefficient of these data?

- A. 0.63
- B. 0.37
- C. -0.37
- D. -0.63

15. The table below shows the times of the men's gold medal winners in the 100-meter dash at the Olympics for different years.

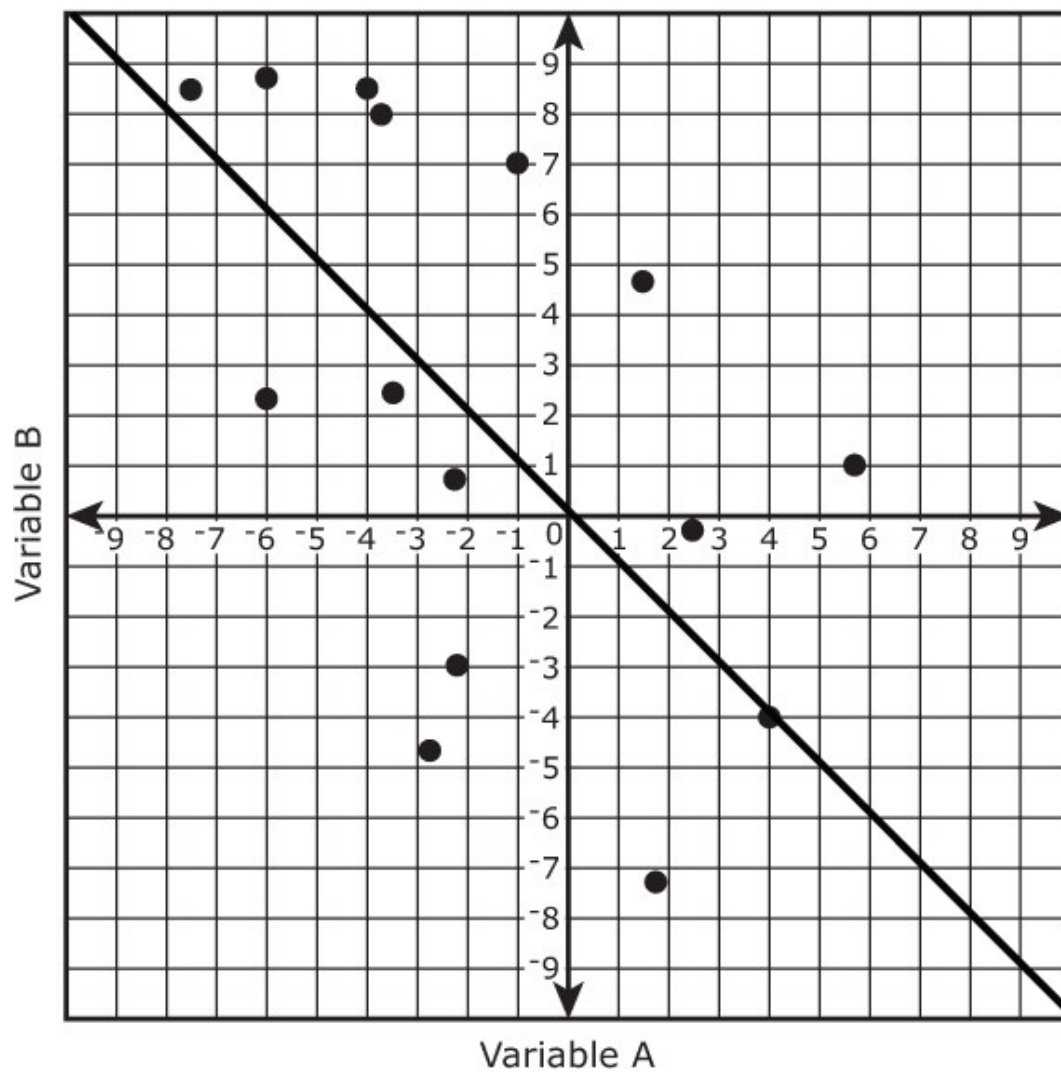
Years since 1980	Time (seconds)
0	10.25
4	9.99
8	9.92
12	9.96
16	9.84
20	9.87
24	9.85
28	9.69

Which is true about the data set?

- A. There is a strong positive correlation between time and years since 1980.
- B. There is a strong negative correlation between time and years since 1980.
- C. There is a weak positive correlation between time and years since 1980.
- D. There is a weak negative correlation between time and years since 1980.

16. The scatter plot below shows data about two variables, Variable A and Variable B, and the line of best fit.

Experiment Data



Which is the **best** estimate of the correlation coefficient of the data shown in the scatter plot?

- A. 1.0
- B. 0.5
- C. -0.5
- D. -1.0

17. The table below shows the stopping distance of a car traveling at different speeds when the brakes are applied.

Speed (mph)	Stopping Distance (m)
20	12
30	23
40	36
50	53
60	72
70	96
80	120

Which statement regarding the correlation coefficient of these data and their meaning is correct?

- A. The correlation coefficient is less than 1; therefore, the stopping distance and speed of a car have no association.
- B. The correlation coefficient is close to 1; therefore, the stopping distance and speed of a car have a weak association.
- C. The correlation coefficient is close to 1; therefore, the stopping distance and speed of a car have a strong association.
- D. The correlation coefficient is not equal to 1; therefore, the stopping distance and speed of a car have no association.

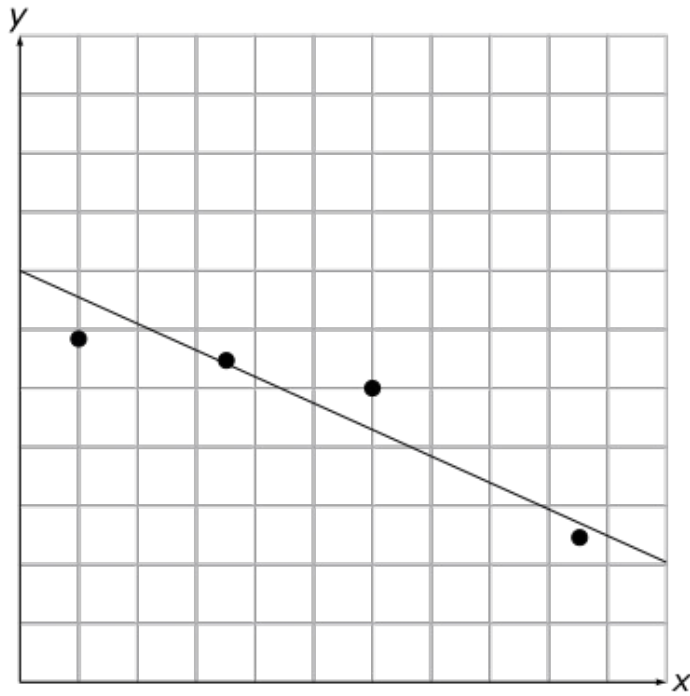
18. George and Ramon are in charge of marketing for a car dealership. Each week, they decide how much money to spend for ads on local radio stations. George has kept track of how much money they have spent in the last five weeks and the sales for the following weeks.

Week	Radio Ad Budget	Sales Revenue
March 2	\$500	\$5,000
March 9	\$450	\$8,000
March 16	\$250	\$6,000
March 23	\$120	\$4,000
March 30	\$200	\$6,500

Which of the following values is the **best** approximation of the linear correlation coefficient for this data?

- A. -0.79
- B. 0.41
- C. 0.89
- D. 3.84

19. A scatterplot and line of best fit are shown below.



Which correlation coefficient **best** fits the scatter plot?

- A. 0.9470
- B. 0.3406
- C. -0.3406
- D. -0.9470

20. What is the **approximate** correlation coefficient of the line of best fit for the data shown in the table below?

x	y
1	0.97
2	0.95
3	0.85
4	0.88
5	0.71
6	0.75
7	0.68

- A. 1.03
- B. 0.88
- C. -0.05
- D. -0.94
21. A student was calculating the residuals of a linear regression equation. The largest residual value found was between 0.90 and 1. What could be said about the data?
- A. There is no correlation.
- B. There is a very weak correlation.
- C. There is a very strong correlation.
- D. The correlation cannot be determined.

22. The table below shows the average amount of time Jessica spent on homework each night in grades 8 through 11.

Grade Level	Time
8	2 hours 10 minutes
9	2 hours 40 minutes
10	3 hours 5 minutes
11	3 hours 20 minutes

What type of correlation exists between grade level and time spent on homework?

- A. strong positive correlation
 - B. weak positive correlation
 - C. strong negative correlation
 - D. weak negative correlation
23. Which correlation coefficient would have the strongest correlation between variables?
- A. 0.8
 - B. 0.3
 - C. -0.2
 - D. -0.9

24. The table below shows the amount of time seven students studied for a test and their respective test scores.

Time Spent Studying (minutes)	Test Score
25	77
0	72
10	80
30	85
60	96
75	98

Which describes the relationship between the time a student spent studying and their test score?

- A. There is a strong, positive correlation between study time and test scores.
 - B. There is a strong, negative correlation between study time and test scores.
 - C. There is a weak, positive correlation between study time and test scores.
 - D. There is a weak, negative correlation between study time and test scores.
25. The correlation coefficient of a set of data is 0.95. Which of these statements can be made about the linear association of these data?
- A. There is a weak positive association.
 - B. There is a weak negative association.
 - C. There is a strong positive association.
 - D. There is a strong negative association.

26. John recorded the weight of six bicycle riders and their average speeds. The results are shown in the table below.

Weight (pounds)	Average Speed (mph)
124	18.6
136	17.2
142	17.0
110	20.1
109	19.8
150	16.8

Using a linear model, what is the meaning of the correlation coefficient in the context of the data?

- A. There is a strong negative correlation showing that the average speed decreases as the weight of the rider increases.
- B. There is a strong negative correlation showing that the average speed increases as the weight of the rider increases.
- C. There is a strong positive correlation showing that the average speed decreases as the weight of the rider increases.
- D. There is a strong positive correlation showing that the average speed increases as the weight of the rider increases.

27. A state park ranger recorded the number of visitors and the average temperature for two weeks.

State Park

Number of Visitors	Average Temperature (°F)
8612	78
8627	79
8816	82
8912	84
8749	80
8934	83
8987	85
8842	84
8798	82
8802	82
8817	83
8776	82
8919	84
8927	84

Which statement represents the relationship between the number of visitors and the temperature?

- A. As the temperature increases, the number of visitors increases.
- B. As the temperature increases, the number of visitors decreases.
- C. As the temperature decreases, the number of visitors increases.
- D. As the temperature increases, the number of visitors stays constant.

28. The data in the table can be entered into a calculator to determine a linear equation of best fit where x represents the school year and y represents the cost of tuition, room, and board in dollars.

Average Annual Tuition, Room, and Board at 4-year Universities

School Year, x	Cost (\$), y
1	16,204
2	16,786
3	17,639
4	18,232
5	18,561
6	19,156
7	19,323
8	20,154

What conclusion can be drawn from the correlation coefficient?

- A. There is a weak positive correlation between the variables.
- B. There is a weak negative correlation between the variables.
- C. There is a strong positive correlation between the variables.
- D. There is a strong negative correlation between the variables.

29. The following table details the resident population of Florida from 1930 to 2000 as reported by the U.S. Census Bureau.

**POPULATION
OF FLORIDA**

Year	Population
1930	1,468,211
1940	1,897,414
1950	2,771,305
1960	4,951,560
1970	6,789,443
1980	9,746,324
1990	12,937,926
2000	15,982,378

What is the correlation coefficient and description of the linear fit for this data?

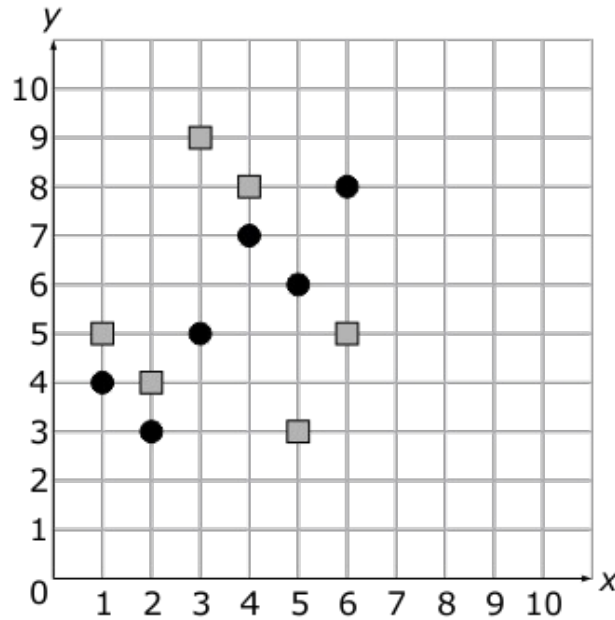
- A. 0.95; strong linear fit
 - B. 0.95; moderate linear fit
 - C. 0.97; strong linear fit
 - D. 0.97; moderate linear fit
30. The table below shows the number of hours a student watches television and the student's grade in math.

Hours of Television	5	7	10	8	7.5	4	5	8	9	11
Math Grade	92	87	61	75	84	93	91	87	84	67

Which **best** describes the correlation between hours of television and math grade?

- A. strong positive
- B. strong negative
- C. weak positive
- D. weak negative

31. Two unique sets of data are represented by either circles or squares on the graph below.



Which statement is true about the best-fit linear model for each set of data?

- A. The circle data set has a strong, negative correlation.
 - B. The square data set has a strong, positive correlation.
 - C. The circle data set has a strong, positive correlation.
 - D. The square data set has a strong, negative correlation.
32. A scatterplot has a line of best fit with a correlation coefficient of 0.18. Which statement **best** describes the data?
- A. The data has a weak negative correlation.
 - B. The data has a strong positive correlation.
 - C. The line of best fit is a good representation for the set of data.
 - D. The line of best fit is not closely aligned to the data set.
33. Trevor recorded the amount of material collected for recycling at his school for 5 weeks. Trevor calculated a line of best fit for the data to model the amount collected, y , as a function of time, x . He found the correlation coefficient to be between -0.7 and -1 . Which statement best describes the correlation among the data?
- A. There is a weak correlation in which the amount collected increased as time increased.
 - B. There is a weak correlation in which the amount collected decreased as time increased.
 - C. There is a strong correlation in which the amount collected increased as time increased.
 - D. There is a strong correlation in which the amount collected decreased as time increased.

34. A set of data is shown to have a correlation coefficient of 0.15. What does this signify about the relationship between the data?
- A. There is a strong positive linear correlation between the x values and y values.
 - B. There is a weak positive linear correlation between the x values and y values.
 - C. There is a strong negative linear correlation between the x values and y values.
 - D. There is a weak negative linear correlation between the x values and y values.
35. The correlation coefficient of a certain set of data is 0.193. Which statement **best** describes the correlation of the variables of the data set?
- A. There is a strong positive correlation between the variables.
 - B. There is a strong negative correlation between the variables.
 - C. There is a weak positive correlation between the variables.
 - D. There is a weak negative correlation between the variables.
36. A student is trying to determine whether there is an association between the number of years of education and the amount of money a person makes. Which of the following would be a reasonable correlation coefficient and interpretation for this situation?
- A. The correlation coefficient is -5.1 , which indicates no association between the number of years of education and the amount of money a person makes.
 - B. The correlation coefficient is 8.2 , which indicates a strong positive linear association between the number of years of education and the amount of money a person makes.
 - C. The correlation coefficient is 0.79 , which indicates a strong positive linear association between the number of years of education and the amount of money a person makes.
 - D. The correlation coefficient is -0.94 , which indicates a weak negative linear association between the number of years of education and the amount of money a person makes.

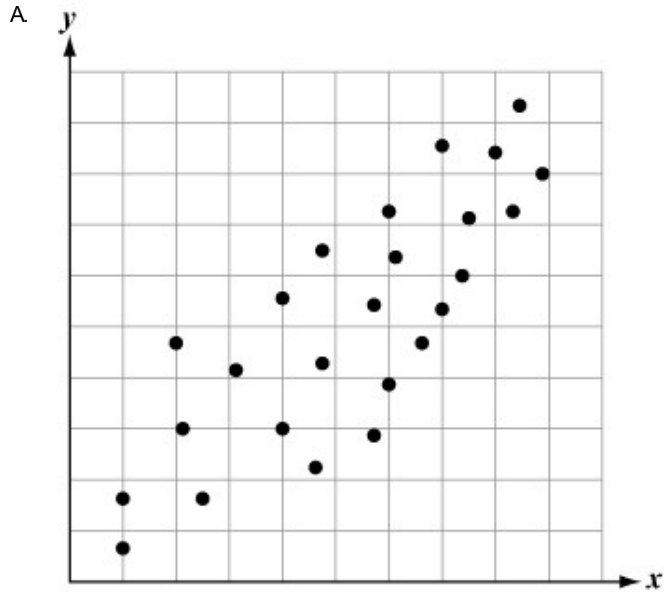
37. The table below shows the arm span and heights 6 vertical jump contestants reached during a track and field competition.

Arm Span (cm)	Vertical Jump (cm)
130	302
140	285
154	290
185	310
190	280
210	300

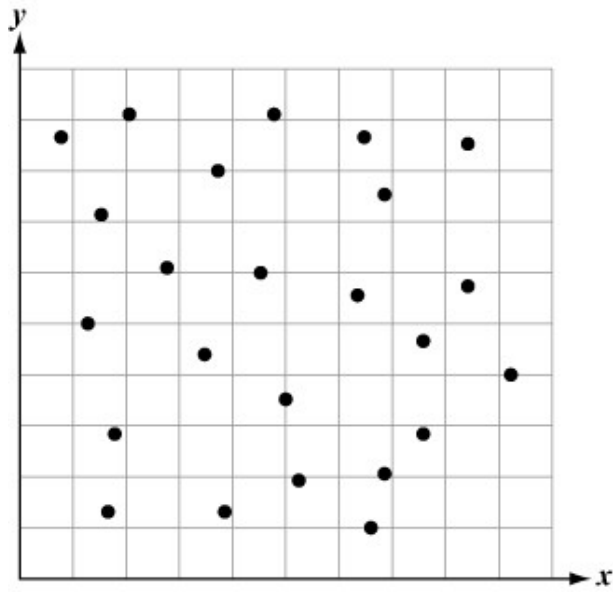
Using the line of best fit for the data, what type of correlation exists between arm span and vertical jump height?

- A. strong positive correlation
- B. strong negative correlation
- C. weak positive correlation
- D. weak negative correlation

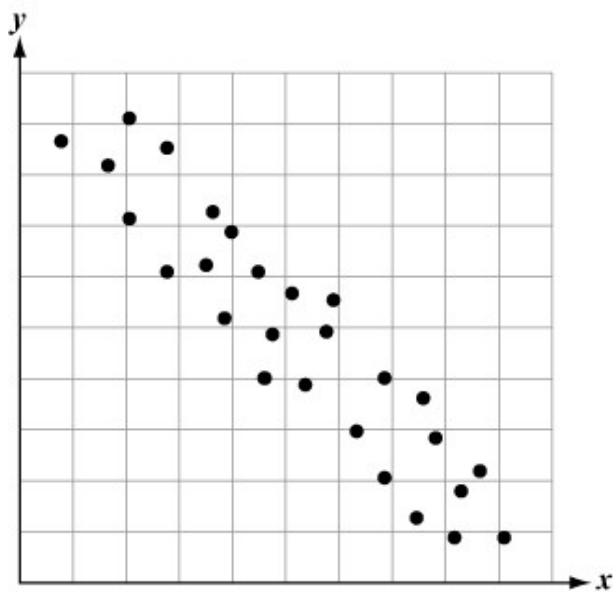
38. Which scatter plot would have a correlation coefficient with the highest value?



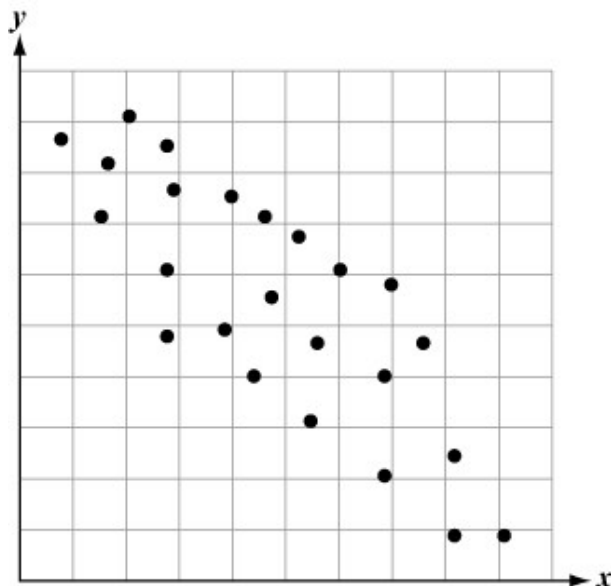
B.



C.



D.



39. The table below shows the dosage of a medicine a person should take based on the weight of the person.

Weight (lb)	Dosage (mg)
100	50
120	75
150	100
175	125
190	130

Which **best** describes the correlation between the dosage a person takes and the person's weight?

- A. There is a strong positive correlation showing that as a person's weight increases the dosage of medicine the person should take increases.
- B. There is a weak positive correlation showing that as a person's weight increases the dosage of medicine the person should take increases.
- C. There is a strong negative correlation showing that as a person's weight decreases the dosage of medicine the person should take decreases.
- D. There is a weak negative correlation showing that as a person's weight decreases the dosage of medicine the person should take decreases.

40. The data in the table can be entered into a calculator to determine a linear equation of best fit where x represents the year and y represents the number of undergraduates at ABC College.

**Undergraduate Enrollment
at ABC College**

Year, x	Number of Undergraduates, y
2004	29,284
2005	28,449
2006	30,930
2007	30,688
2008	31,173
2009	29,209
2010	31,252

What conclusion can be drawn from the correlation coefficient associated with this linear equation?

- A. There is a strong positive correlation between the variables.
 - B. There is a strong negative correlation between the variables.
 - C. There is a moderate positive correlation between the variables.
 - D. There is a moderate negative correlation between the variables.
41. Which **best** describes the linear correlation between x and y ?

x	y
10	19.68
20	17.52
30	15.01
40	14.00
50	11.53
60	7.99

- A. strong and positive
- B. weak and positive
- C. strong and negative
- D. weak and negative

42. Consider the given table.

x	y
1	5
2	4
3	3
4	2
5	1

Which statement is valid for the correlation coefficient of the data?

- A. The correlation coefficient of -1 indicates that the x and y values have a perfect linear relationship.
- B. The correlation coefficient of 1 indicates that the x and y values have a perfect linear relationship.
- C. The correlation coefficient of -1 indicates that the x and y values have a weak linear relationship.
- D. The correlation coefficient of 1 indicates that the x and y values have a weak linear relationship.

43. The table below shows the amount of money spent on the school dance each year for 7 years.

School Dance Money

Year	Money Spent
1999	\$90
2000	\$105
2001	\$85
2002	\$185
2003	\$250
2004	\$270
2005	\$300

Which best describes the correlation shown in the table?

- A. positive correlation
- B. negative correlation
- C. constant correlation
- D. no correlation

44. For part of a science project, Lany listed the average body temperature in degrees Celsius ($^{\circ}\text{C}$) of nine different insects at the given air temperatures.

Air Temperature ($^{\circ}\text{C}$)	Body Temperature ($^{\circ}\text{C}$)
25.7	27.0
30.4	31.5
28.7	28.9
31.2	31.0
31.5	31.5
26.2	25.6
30.1	28.4
31.5	31.7
18.2	18.7

What does the value of the correlation coefficient for these data describe about the association between air temperature and body temperature of insects?

- A. There is a weak positive linear relationship.
- B. There is a strong positive linear relationship.
- C. There is a weak negative linear relationship.
- D. There is a strong negative linear relationship.

45. The table below shows the amounts James plans to receive at the end of each year from one of his investments.

Number of Years	Amount (in dollars)
0	2000
1	2160
2	2320
3	2420
4	2500
5	2780
6	2940

What is the correlation coefficient, and which statement **best** describes this linear relationship?

- A. 0.01; weak negative
 - B. 0.01; weak positive
 - C. 0.99; strong negative
 - D. 0.99; strong positive
46. The data in the table can be entered into a calculator to determine a linear equation of best fit where x represents the number of years with a company and y represents an employee's salary in dollars.

Employee's Salary

Years With Company, x	Salary, y (\$)
1	42,000
2	43,000
3	44,000
4	46,000
5	56,000
6	58,000
7	65,000
8	68,000
9	71,000
10	78,000

What conclusion can be drawn from the correlation coefficient associated with this linear equation?

- A. There is a weak positive correlation between the variables.
- B. There is a weak negative correlation between the variables.
- C. There is a strong positive correlation between the variables.
- D. There is a strong negative correlation between the variables.

47. The Smith family wants to rent a house at the beach. The cost of each house varies by the number of bedrooms it has. The chart below shows the price of several of the houses they are considering renting.

Number of Bedrooms	2	3	4	3	6	6	5
Cost per Night	\$560	\$725	\$785	\$850	\$1,200	\$1,450	\$960

Using the correlation coefficient, what conclusion can be made about the linear relationship of the data?

- A. Since the correlation coefficient is 0.92, it shows that having more bedrooms causes the price to go up.
- B. Since the correlation coefficient is 0.92, it shows that there is a strong linear relationship between cost and the number of bedrooms.
- C. Since the correlation coefficient is 0.84, it shows that having more bedrooms causes the price to go up.
- D. Since the correlation coefficient is 0.84, it shows that there is a strong linear relationship between cost and the number of bedrooms.