

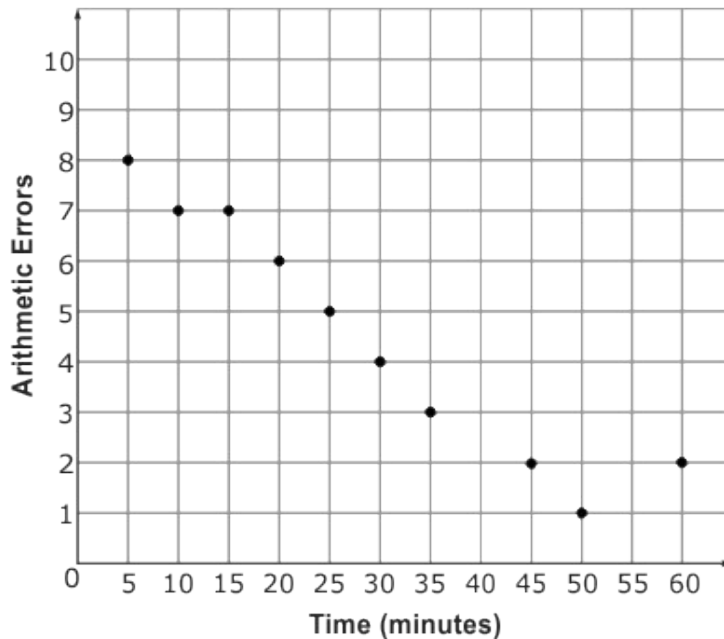
TEST NAME: **Scatter Plots Math 1 2016-17**
TEST ID: **1263717**
GRADE: **08 - Eighth Grade - 09 - Ninth Grade**
SUBJECT: **Mathematics**
TEST CATEGORY: **School Assessment**

Student: _____

Class: _____

Date: _____

1. The scatterplot below shows the number of arithmetic errors 10 students made on a quiz and the amount of time the students took to complete the quiz.

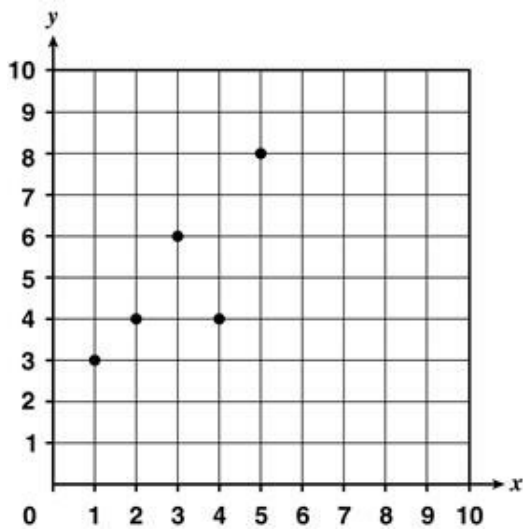


Which describes the relationship between the number of arithmetic errors the students made and the amount of time the students took to complete the quiz?

- A. There is a strong positive relationship between the variables.
 - B. There is a strong negative relationship between the variables.
 - C. There is a weak positive relationship between the variables.
 - D. There is a weak negative relationship between the variables.
2. **An elementary school consists of kindergarten (grade 0) through grade 5. The equation $n = -38g + 378$ can be used to determine the number of students, n , who started the school in kindergarten and who are still in the school at grade g . Which description represents the meaning of 378?**
- A. the number of students who started at the school in kindergarten
 - B. the number of students who were at the school at the end of grade 1
 - C. the number of students who started at the school in kindergarten but who left at each grade
 - D. the number of students who started at the school in kindergarten and who were still there at the end of grade 5

3. **Which statement illustrates a causation effect?**
- A. As the number of high schools increases, the number of enrolled students goes up.
 - B. As the number of weddings increases, the number of marriage licenses increases.
 - C. As the number of gym memberships increases, the number of people who lose weight increases.
 - D. As the number of visitors to theme parks increases, the number of hamburgers sold at theme park concession stands increases.
4. **The equation $T = 0.63s + 78$ can be used to determine T , the temperature in degrees, inside an oven s seconds after the oven is turned on. Which statement relative to this equation is true?**
- A. Each second the temperature increased 78 degrees.
 - B. The initial temperature inside the oven was 78 degrees.
 - C. The temperature inside the oven in one minute was 141 degrees.
 - D. The temperature inside the oven increased by 78 degrees every 63 seconds.
5. **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.
6. **Which statement is the best hypothesis to be tested for a causal relationship?**
- A. Students drink more bottles of water based on the time of day.
 - B. Students drink more bottles of water when they are exercising.
 - C. Students drink more bottles of water when the price is lower.
 - D. Students drink more bottles of water after a major test.
7. **Which of the following best describes a relationship that is not a causation?**
- A. the more the rooster crows, the more often it rains
 - B. the more miles driven, the more gasoline needed
 - C. the faster the pace of the runner, the more quickly the runner finishes
 - D. the higher the hourly wage, the greater the income for 40 hours of work
8. **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.

9. 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

10. 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.

11. **Students were asked how many minutes they spent doing homework during one week. The table shows their recorded times and their test scores at the end of that week.**

Student	Time Doing Homework (minutes)	Test Score
1	60	70%
2	55	70%
3	80	95%
4	65	80%
5	65	72%
6	90	85%
7	75	87%

The correlation coefficient of the line of best fit for the data in the table is 0.81. Based on this information, which statement is true?

- A. The correlation coefficient indicates a strong correlation, which means that spending more time on homework causes higher test scores.
 - B. The correlation coefficient indicates no correlation, which means that spending more time on homework does not cause higher test scores.
 - C. The correlation coefficient indicates a strong correlation, but this does not mean that spending more time on homework causes higher test scores.
 - D. The correlation coefficient indicates no correlation, and this does mean that spending more time on homework causes higher test scores.
12. **Kara compared the number of text messages 100 students sent in one day and the grade point average (GPA) of each student. The correlation coefficient among the data is -0.9 rounded to the nearest tenth. Based on this information, which statement is most likely true?**
- A. There is correlation but not causation between GPA and the number of text messages.
 - B. There is causation but not correlation between GPA and the number of text messages.
 - C. There is both correlation and causation between GPA and the number of text messages.
 - D. There is neither correlation nor causation between GPA and the number of text messages.
13. **Which two variables are related by causation?**
- A. age and income
 - B. height and weight
 - C. speed and distance traveled
 - D. reading ability and shoe size

14. 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.
15. The data in the table represents the volume of helium, in cubic feet, inside a balloon relative to the elapsed time in minutes.

Elapsed Time, x (min)	Volume of Helium, y (cu ft)
5	5.5
10	5
15	4.5
20	4
25	3.5
30	3
35	2.5
40	2

What does the slope of the linear equation that models the data indicate?

- A. A balloon can contain a maximum of 6 cubic feet of helium.
- B. A time of 6 minutes is required for each cubic foot decrease in a balloon's volume.
- C. The volume of helium inside the balloon increased at a rate of 0.1 cubic feet per minute.
- D. The volume of helium inside the balloon decreased at a rate of 0.1 cubic feet per minute.

16. 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.
17. **Which statement about the relationship between correlation and causation is true?**
- A. Causation implies correlation.
 - B. Correlation implies causation.
 - C. Positive correlation implies causation.
 - D. Negative correlation implies a lack of causation.

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

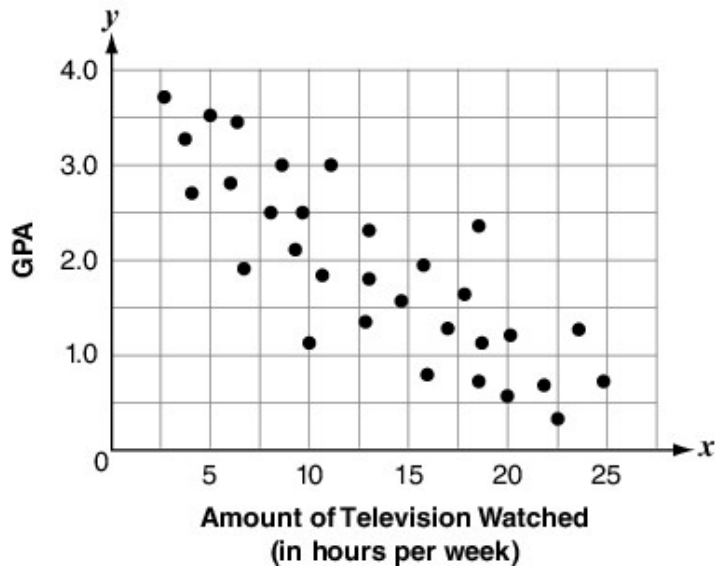
State Park

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?

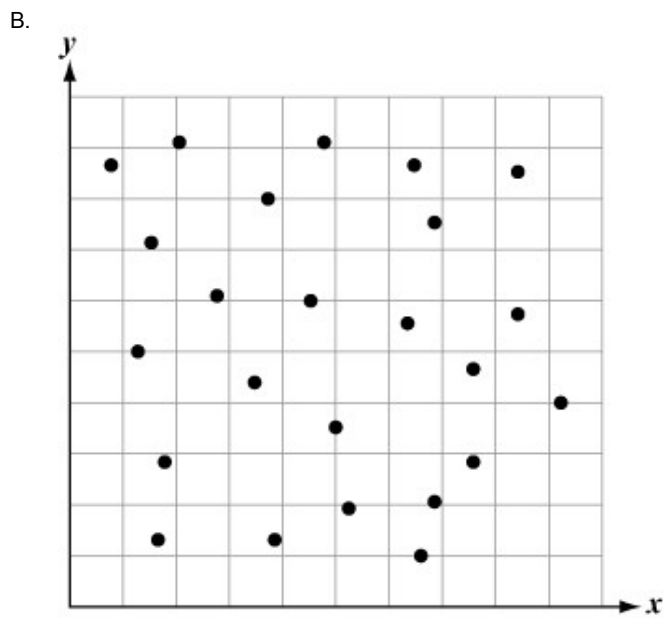
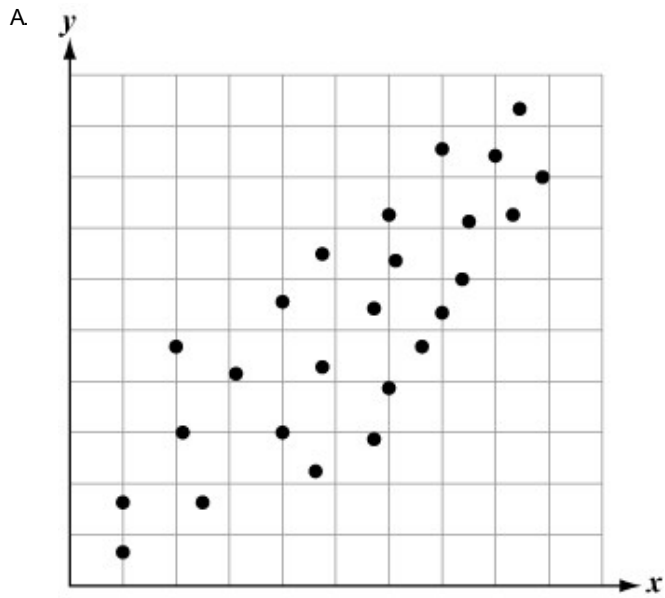
- A. As the temperature increases, the number of visitors increases.
- B. As the temperature increases, the number of visitors decreases.
- C. As the temperature decreases, the number of visitors increases.
- D. As the temperature increases, the number of visitors stays constant.

19. 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.

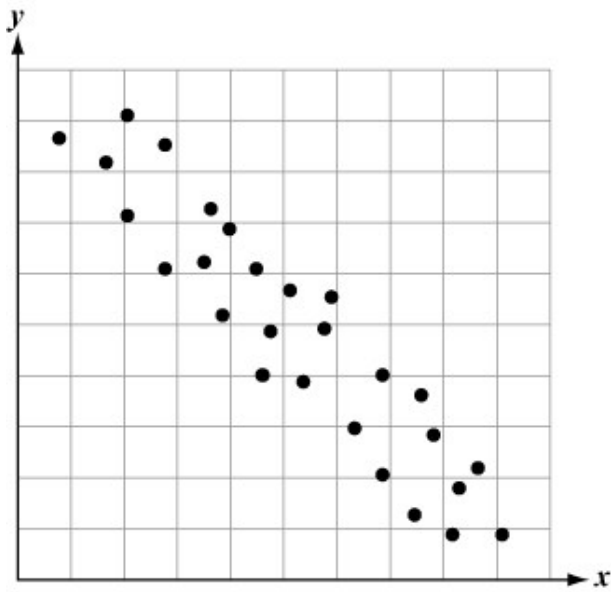


Which of these would be a reasonable correlation coefficient for these data?

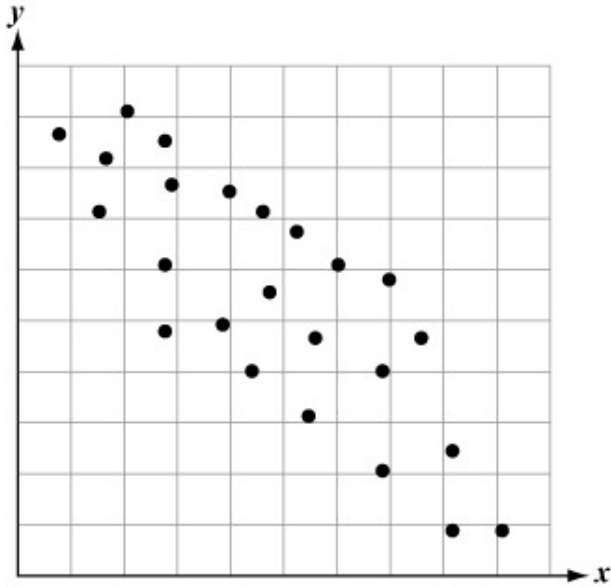
- A. -0.8
 - B. -0.2
 - C. 0.2
 - D. 0.8
20. Which scatter plot would have a correlation coefficient with the highest value?



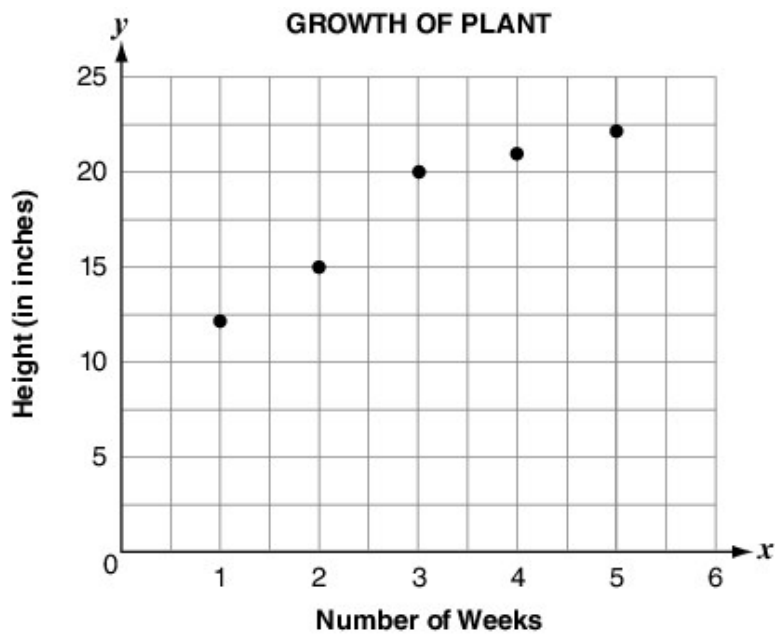
C.



D.



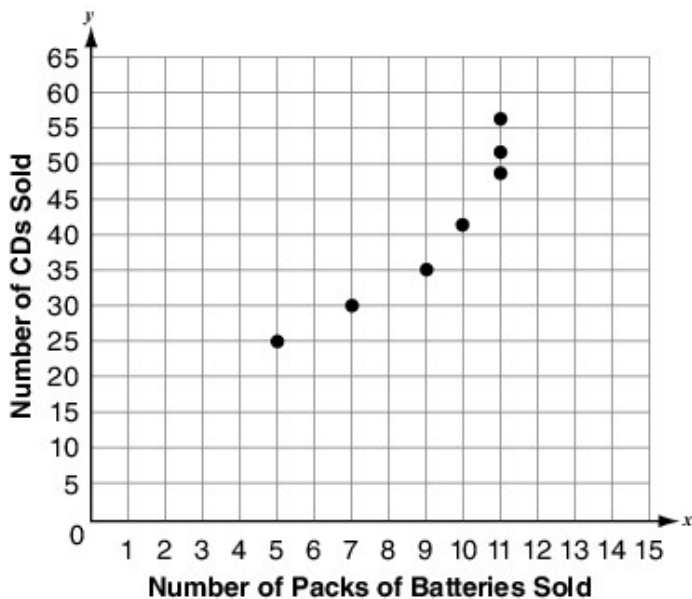
21. The scatter plot below represents the growth of a plant each week.



Which statement is a correct interpretation of the linear model that represents these data?

- A. The initial height of the plant is about 2.5 inches.
- B. The initial height of the plant is about 12 inches.
- C. The plant grows about 2.5 inches every week.
- D. The plant grows about 10 inches every week.

22. The graph below shows the number of compact disks and the number of packs of batteries sold in a certain store each day during a one-week time period.



Which statement is **true**?

- A. The sales of compact disks and batteries are positively correlated, and the graph implies causation.
 - B. The sales of compact disks and batteries are negatively correlated, and the graph implies causation.
 - C. The sales of compact disks and batteries are positively correlated, and the graph does not imply causation.
 - D. The sales of compact disks and batteries are negatively correlated, and the graph does not imply causation.
23. The height, h , (in cm) of a certain plant t days after it is planted can be best described by the linear model $h = 1.20t + 0.14$. What does the slope of this linear model represent in terms of the context?
- A. The height of the plant increases by 1.20 cm each day.
 - B. The height of the plant increases by 0.14 cm each day.
 - C. The height of the plant at the time of planting was 0.14 cm.
 - D. The height of the plant at the time of planting was 1.20 cm.

24. 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
25. The table below shows the number of hours per week six students spend online and their current grades in math.

Hours Online (per week)	12	8	15	25	4	1	9
Current Math Grade	78	82	73	68	90	93	85

Using a line of best fit, which statement **best** describes the y-intercept of the equation?

- A. the number of hours spent online if a student's grade were zero
- B. the average change in the grade of a student per hour spent online
- C. the grade a student should expect when no time is spent online
- D. the point at which a student's grade is the lowest

26. The table below shows the population of a state in different years.

Years since 2005	Population
1	8,347,873
2	8,500,104
3	8,640,000
4	8,790,022
5	8,938,124

What is the meaning of the y -intercept of the line of best fit for the data?

- A. the total population of the city when it was founded
- B. the average increase in population each year
- C. the total population increase per year
- D. the approximate population in 2005