Domain Assessment • **Statistics and Probability**

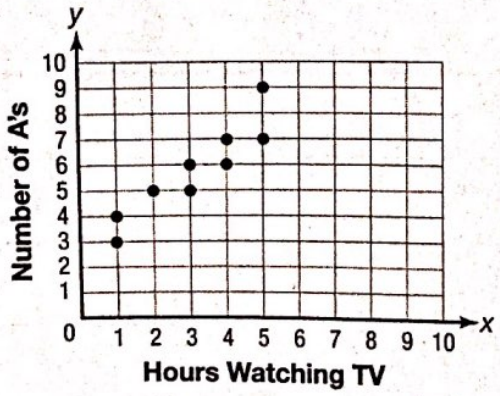
1. Mr. Jain gives his class a quiz every Monday. He randomly surveyed some of his students to see there was a relationship between weekend hours spent watching TV and quiz scores. Mr. Jain's data are shown in the table below.

Weekend TV Hours and Quiz Scores

Mean Number of Weekend Hours Watching TV	Number of A's on Quizzes
1	8
3	6
5	4
2	7
1	9
4	6
3	7
1	7
5	3
4	5

Which of the scatter plots below best represents Mr. Jain's data?

A.



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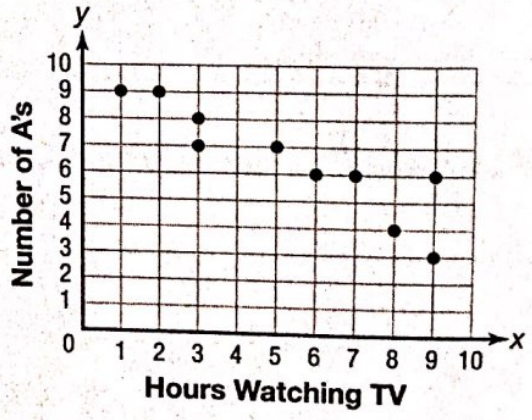

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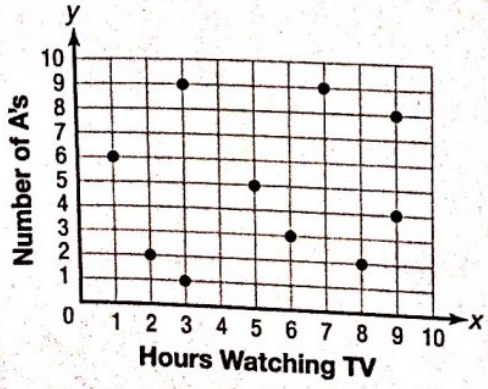

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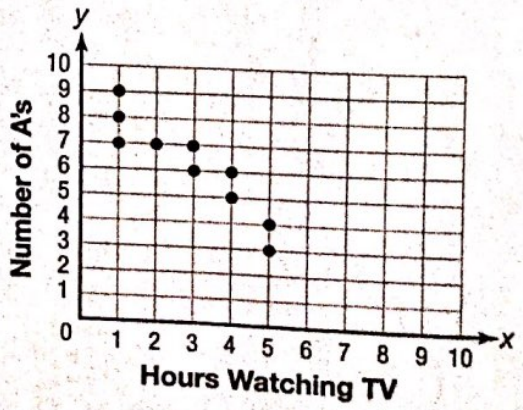

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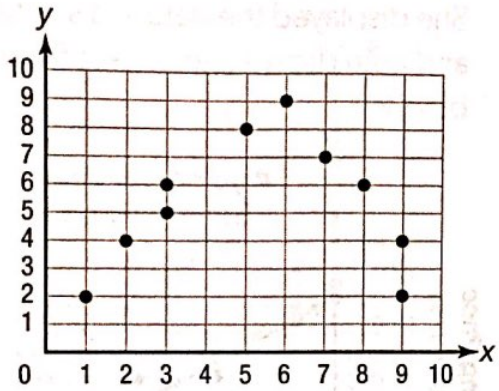
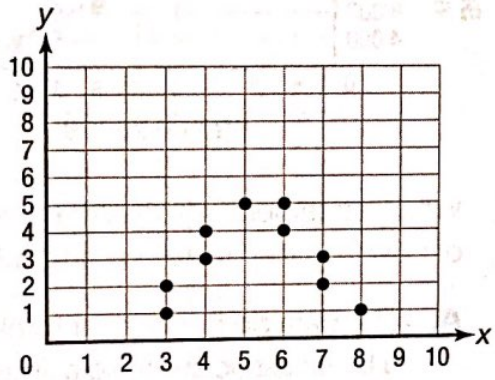
2. Which of the scatter plots below best shows clustering of the data?

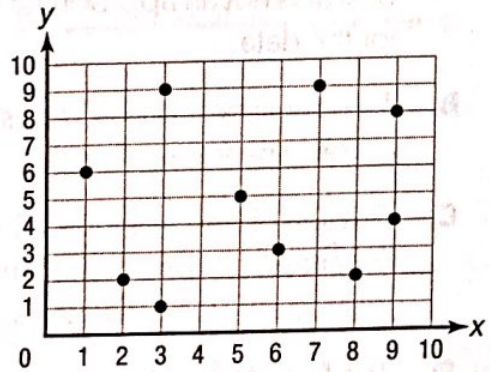
A.



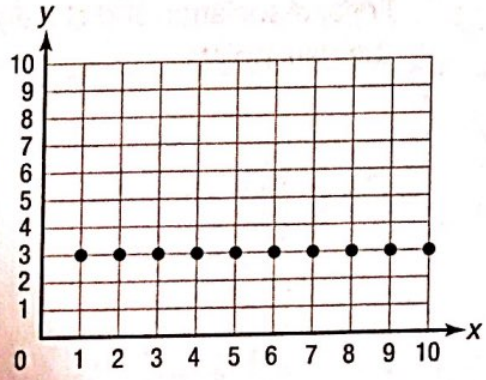
B.



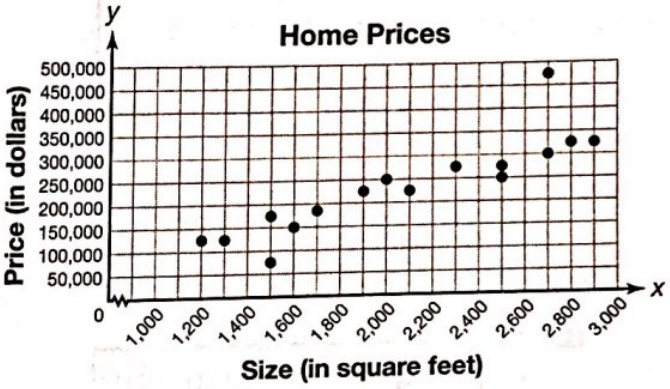
C.



D.



3. Malik is a real estate agent. He created a scatter plot to examine the relationship between the size of a home and its price, as shown below.



Which of the following statements best describes the data in Malik's scatter plot?

A. The data show a positive nonlinear association with clustering and outliers.

B. The data show a positive linear association with no clustering or outliers.

C. The data show a positive linear association with no clustering, but with outliers.

D. The data show a negative linear association with clustering, but with no outliers.

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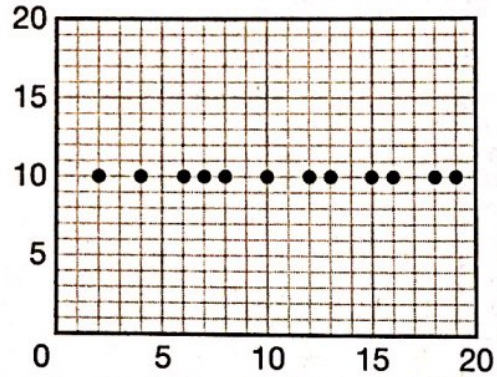
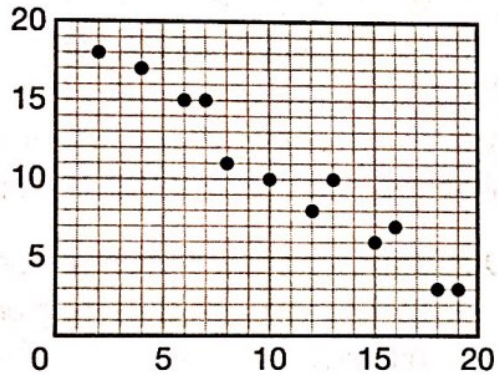
4. Which of the scatter plots below best represents a positive linear association for the data?

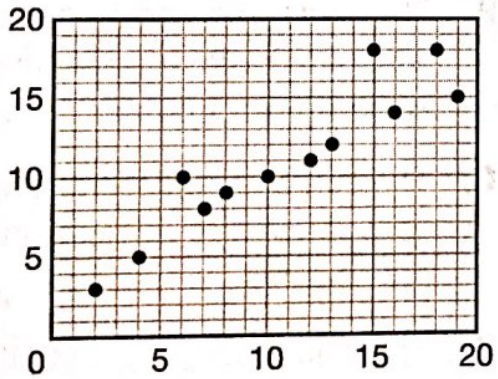
A.



B.



C.



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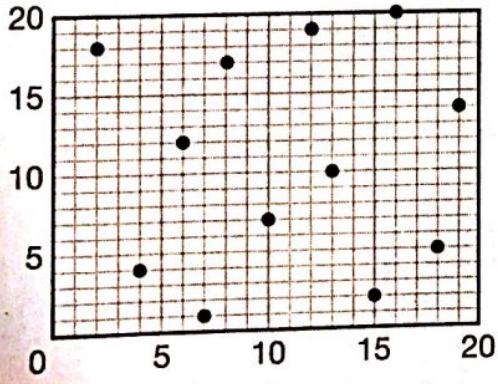
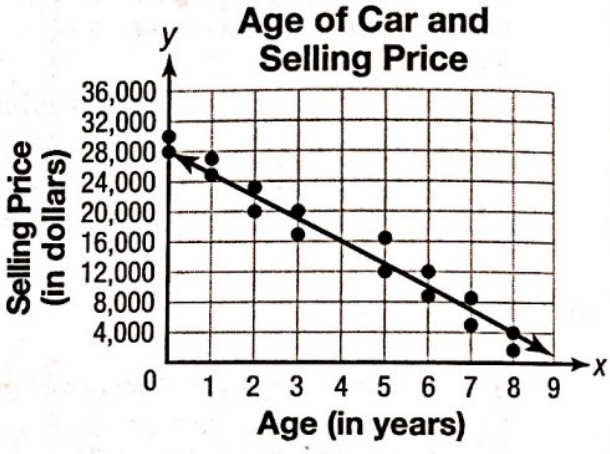


5. The owner of a car dealership recorded the ages and selling prices of cars sold over one weekend at the dealership. She displayed the data in a scatter plot and then drew a line of best fit, as shown below.



Which statement is true about the line of best fit in the owner's scatter plot?

A. The data do not appear to have a linear association, so a line of best fit is not an appropriate model for the data.

B. The line of best fit does not show the correct linear association.

C. The line of best fit shows the correct linear association but does not include enough data points.

D. The line of best fit shows the correct linear association and closely models the data points.

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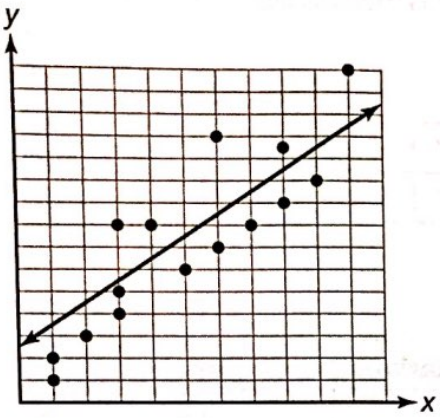
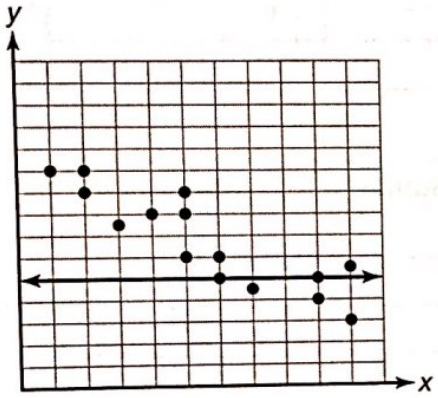
6. Which scatter plot shows the line that best fits the given data?

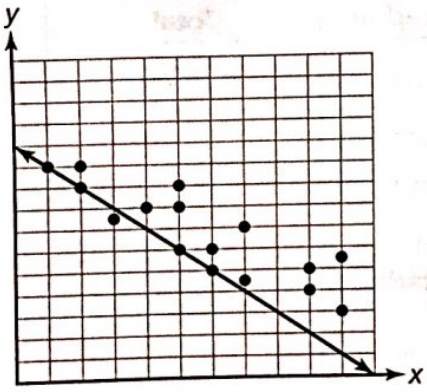
A.



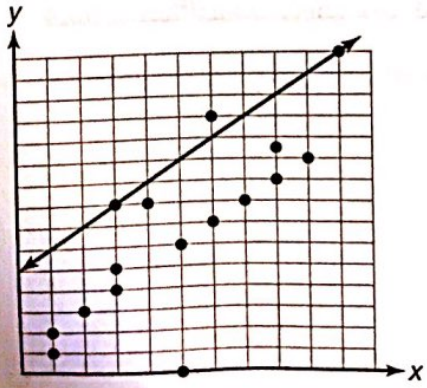
B.



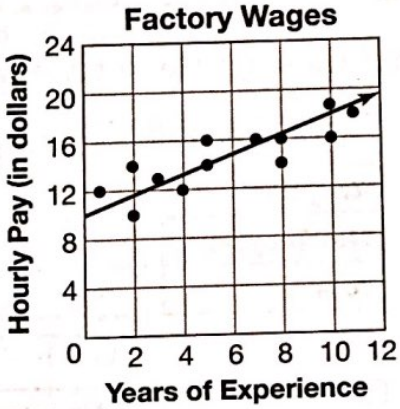
C.



D.



7. The president of a union of factory employees used a random sample to collect data on the number of years of experience and the hourly wages of the factory employees. She then created a scatter plot with the data and drew a line of best fit, as shown below.



Which of the following statements best describes the meaning of the *y*-intercept of the line of best fit in the scatter plot?

A. A factory employee's hourly wage increases by about $0.80 for every additional year of experience.

B. A factory employee with no experience will start with an hourly wage of about $10.00.

C. A factory employee with more than 10 years of experience will have an hourly wage of more than $18.00.

D. The maximum hourly wage at the factory is $24.00.

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8. Emily surveyed a random sample of adults in her neighborhood. She asked each person whether he or she is a vegetarian and whether he or she recycles regularly. The responses to Emily's survey are shown in the table below. In the table, a *yes* answer is marked by a Y and a *no* answer is marked by an N.

Vegetarian?	N	N	Y	N	N	N	Y	Y	N	N	N	Y	N	N	N
Recycle?	Y	Y	N	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y

Which two-way table best displays Emily's data?

A.

	Vegetarian	Not Vegetarian	Total
Recycle	10	3	13
Not Recycle	1	1	2
Total	11	4	15

B.

	Vegetarian	Not Vegetarian	Total
Recycle	4	9	13
Not Recycle	0	2	2
Total	4	11	15

C.

	Vegetarian	Not Vegetarian	Total
Recycle	9	4	13
Not Recycle	2	0	2
Total	11	4	15

D.

	Vegetarian	Not Vegetarian	Total
Recycle	3	10	13
Not Recycle	1	1	2
Total	4	11	15

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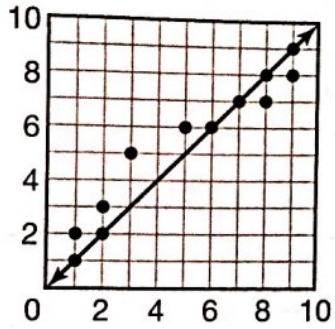
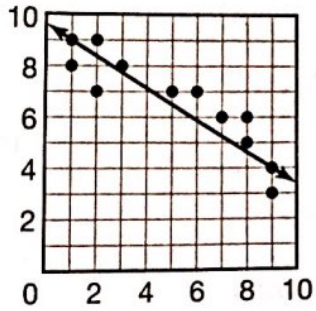
9. Which scatter plot does **not** show the line that best fits the given data?

A.



C.



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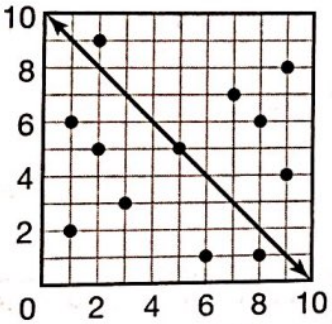
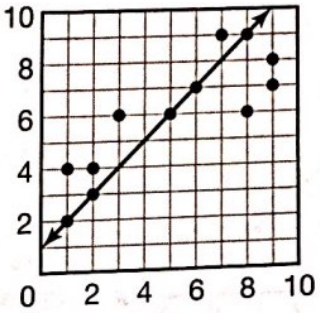


D.



10. As part of a project on voting patterns in Akron, Mr. Eng asked his social studies class to survey adults at random about whether they had voted in the most recent mayoral and presidential elections. The results of the class's survey are shown in the table below.

	President: Yes	President: No	Total
Mayor: Yes	143	17	160
Mayor: No	105	190	295
Total	248	207	455

Based on the data in the table, which of the following statements is true?

A. More people voted for president than voted for mayor.

B. More people voted for mayor than voted for president.

C. The same number of people voted for president as voted for mayor.

D. More people voted for both president and mayor than did not vote at all.

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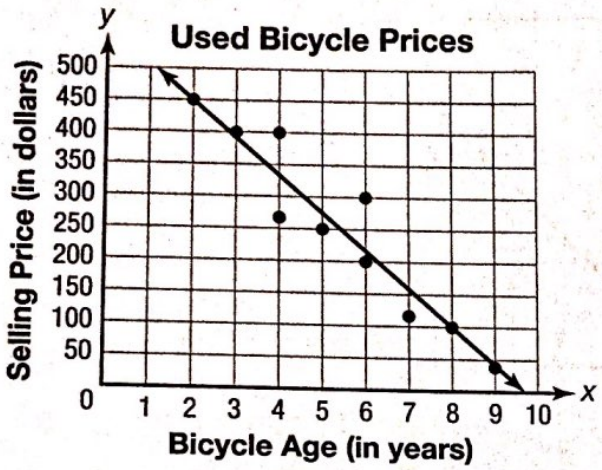
11. Vivian spent the summer working at a bicycle shop. One week, the owner asked her to collect data on the ages and selling prices of the bicycles sold that week. Vivian displayed her data in a scatter plot and drew a line of best fit, as shown below.



According to Vivian's line of best fit, which of the following statements is true?

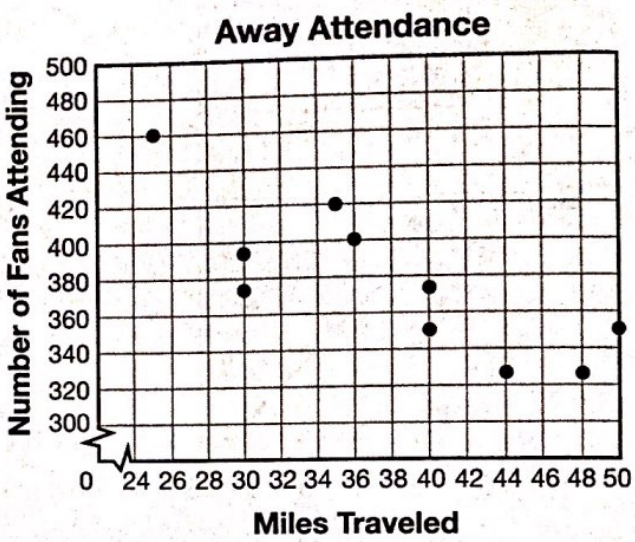
A. There is no correlation between the age of a bicycle and its selling price.

B. There is a correlation between the age of a bicycle and its selling price, but it is nonlinear.

C. The selling price of a bicycle drops by about $60 per year.

D. The selling price of a bicycle rises by about $60 per year.

12. The owners of a minor league baseball team collected data to see how many of their team's fans traveled to the team's away games. The data are displayed in the scatter plot below.



Which of the following statements best describes the data in the scatter plot?

A. There does not seem to be any association between miles traveled and fan attendance.

B. There seems to be a nonlinear association between miles traveled and fan attendance.

C. There seems to be a positive linear association in the data. The more fans the team has, the farther they will travel for a game.

D. There seems to be a negative linear association in the data. The farther that fans need to travel for a game, the fewer fans attend the game.

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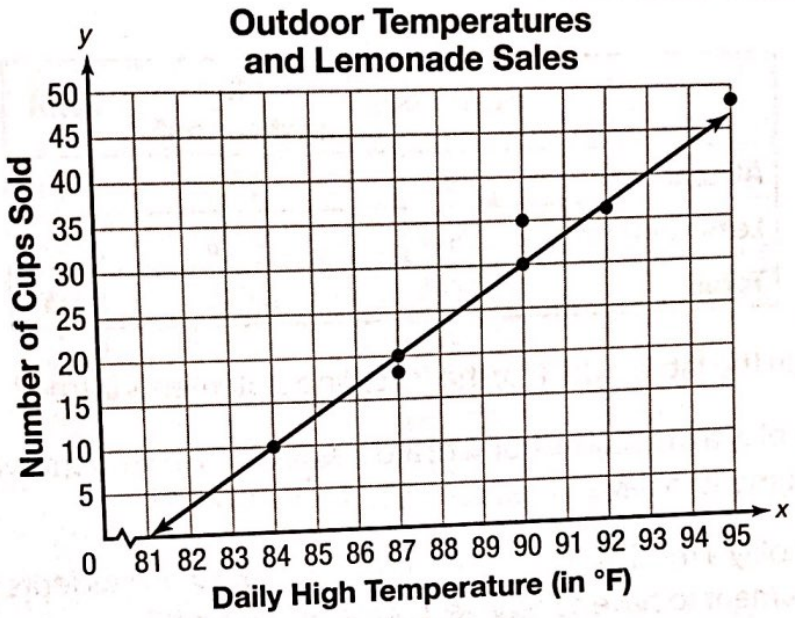
13. Every summer, Gus and Nick run a lemonade stand in front of their family's home. For one week, they collected data on temperature and sales of lemonade. Gus and Nick then displayed their data in a scatter plot and drew a line of best fit, as shown below.



Based on the data in Gus and Nick's scatter plot, what is the effect on lemonade sales of an increase in temperature of 1 degree Fahrenheit?

A. Lemonade sales increase by a little more than $3.00.

B. Lemonade sales increase by a little less than $3.00.

C. Lemonade sales drop by a little less than $3.00.

D. There is no correlation in the data, so temperature does not affect lemonade sales.

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14. Liam wanted to find out whether there is an association between playing a musical instrument and scores on math tests. He asked the students in his math class whether they play a musical instrument and whether their mean test score is at least 85. The results of his survey are shown in the relative frequency table below.

	Instrument	No Instrument	Total
At Least 85	69%	56%	64%
Less Than 85	31%	44%	36%
Total	100%	100%	100%

Based on the data in the table, which of the following statements is true?

A. Students who play a musical instrument are less likely than students who do not play a musical instrument to have a mean test score of at least 85.

B. Students who play a musical instrument are more likely than students who do not play a musical instrument to have a mean test score of at least 85.

C. Students who play a musical instrument are as likely as students who do not play a musical instrument to have a mean test score of at least 85.

D. Students who do not play a musical instrument are less likely to have a mean test score of at least 85.

15. Hayes Middle School is conducting a survey of students to choose a new school mascot. The choice is either a lion or a cardinal. The results of the survey are shown in the table below.

	Boys	Girls	Total
Lion	270	268	538
Cardinal	193	269	462
Total	463	537	1,000

Based on the data in the table, which of the following statements is true?

A. There are fewer boys who prefer a lion than there are girls who prefer a cardinal.

B. More girls prefer a lion than prefer a cardinal.

C. The number of boys who prefer a lion is about equal to the number of girls who prefer a lion.

D. The number of boys who prefer a cardinal is about equal to the number of girls who prefer a cardinal.

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