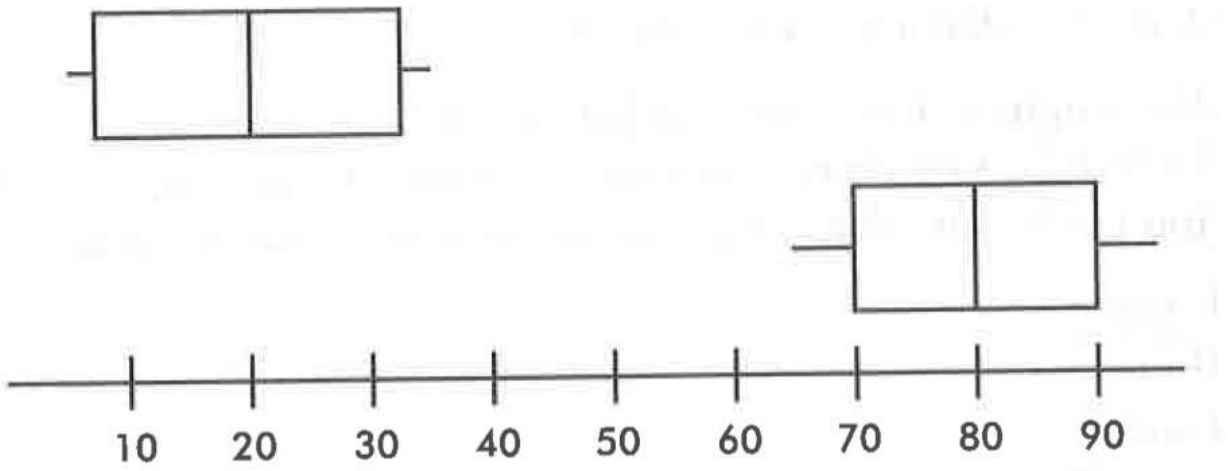
Directions: Answer the following question(s).

1 Consider the following parallel boxplots illustrating daily temperatures (in degrees Fahrenheit) of an upstate New York city during January and July.



Which of the following are true statements?

I.The ranges are the same.

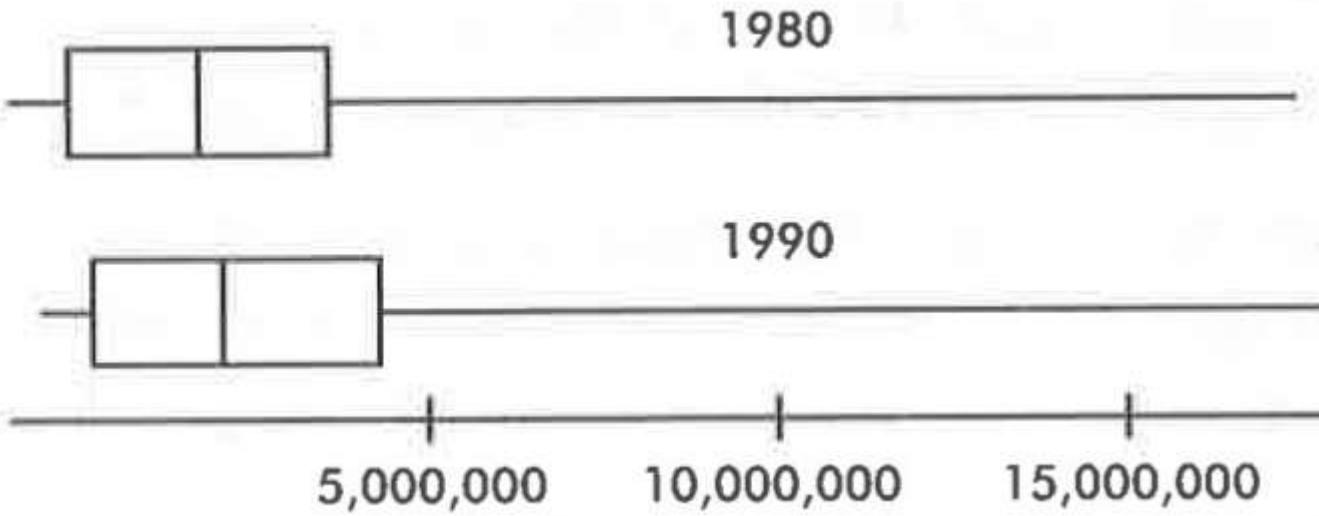
II.The interquartile ranges are the same.

III.Because of symmetry, the medians are the same.

A. I only
B. II only
C. I and II
D. I and III
E. II and III

Directions: Answer the following question(s).

2 Consider the following parallel boxplots:



Which of the following are true statements?

I.The shape has stayed approximately the same from 1980 to 1990.

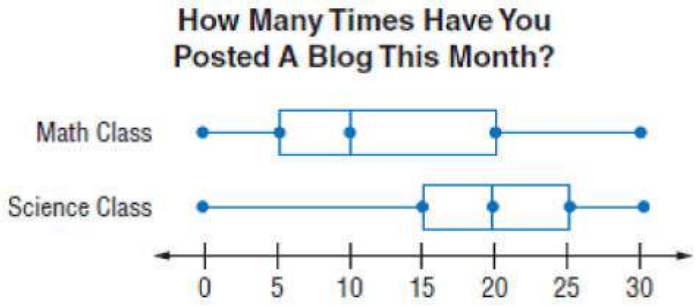
II.The range has stayed approximately the same from 1980 to 1990.

III.The interquartile range has stayed approximately the same from 1990 to 1980.

A. I only
B. II only
C. III only
D. I and III
E. I, II, and II

Directions: Answer the following question(s).

3 Kacey surveyed a different group of students in her science and math classes. The double box plot shows the results for both classes.



Which measure has the greatest difference between the two data sets?

A. range
B. median
C. interquartile range
D. upper quartile

4 **The data distributions below show the running times of a group of runners before and after training for a marathon.**

Which statement correctly explains the summary statistics that should be used to compare the running times?

A. The distributions are normal, so the mean and standard deviation should be used to compare the running times.
B. The distributions are skewed, so the mean and standard deviation should be used to compare the running times.
C. The distributions are normal, so the median and interquartile range should be used to compare the running times.
D. The distributions are skewed, so the median and interquartile range should be used to compare the running times.

Directions: Answer the following question(s).

5 **The golf scores of the players on two golf teams, Team A and Team B, are listed in order from lowest to highest below.**

Team A: 65, 67, 67, 68, 70, 70, 70, 71, 74, 77, 78, 78, 81, 81, 82
Team B: 63, 65, 67, 68, 70, 70, 71, 73, 74, 77, 77, 77, 78, 81, 84

Which of the following statements is a correct comparison of Team B to Team A?

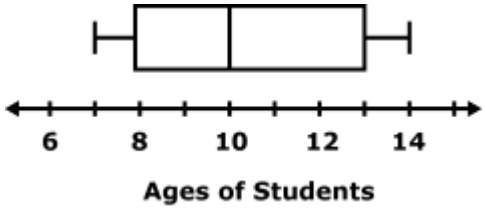
A. Team B has a larger median and a smaller interquartile range.
B. Team B has a larger median and the same interquartile range.
C. Team B has a smaller median and a larger interquartile range.
D. Team B has a smaller median and the same interquartile range.

6 **The age of each student in a scout troop is shown below.**

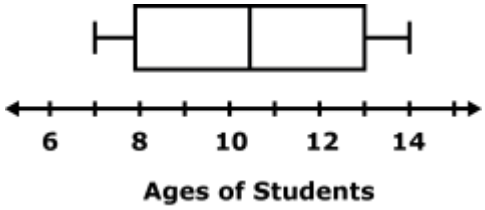
7, 7, 8, 8, 8, 9, 9, 10, 10, 11, 11, 11, 12, 12, 13, 13, 14, 14

Which box plot *best* represents the age of the students in the scout troop?

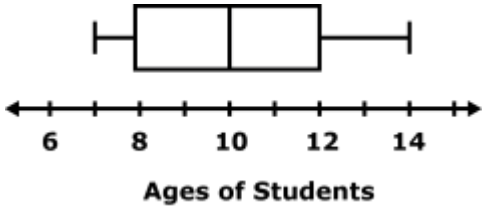
A.



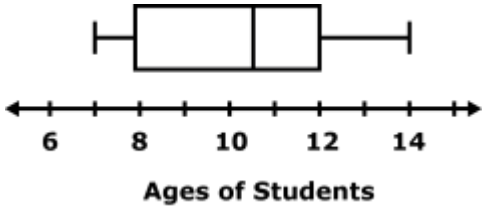
B.



C.



D.



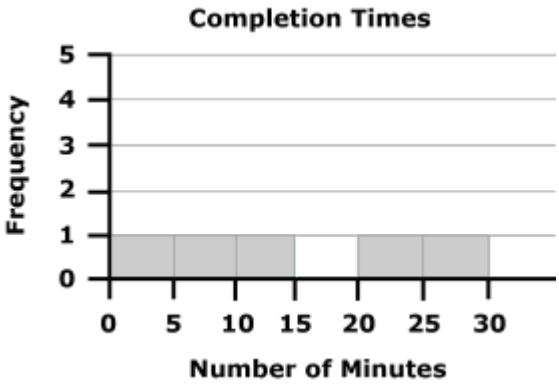
Directions: Answer the following question(s).

7 **A farmer creates a maze with bales of hay. The data set below represents the number of minutes it takes children of various ages to complete the maze.**

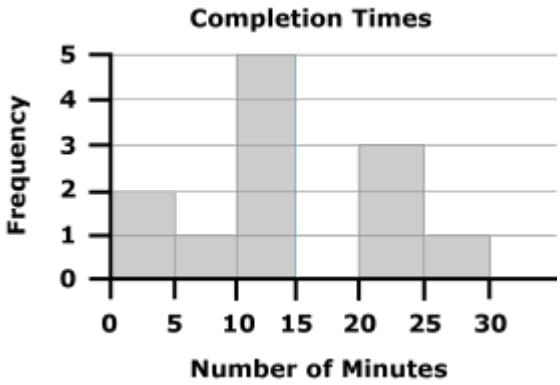
11, 4, 24, 12, 14, 26, 4, 11, 14, 21, 6, 21

Which of the following histograms correctly displays this data set?

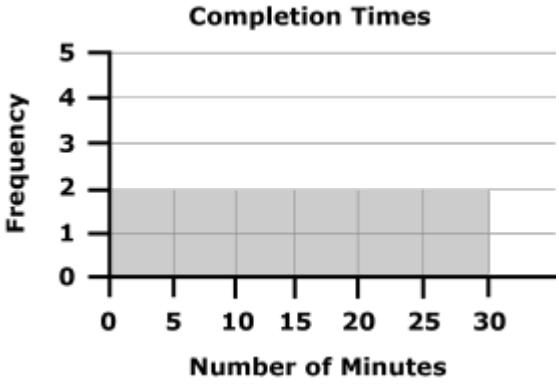
A.



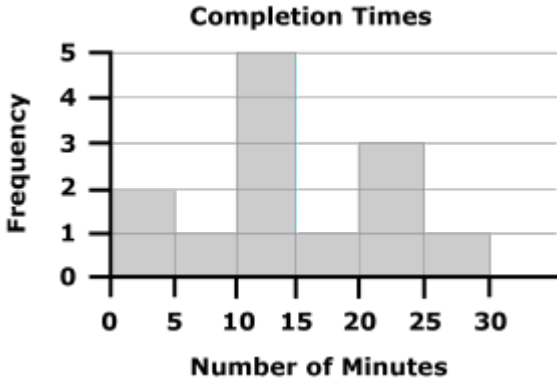
C.



B.

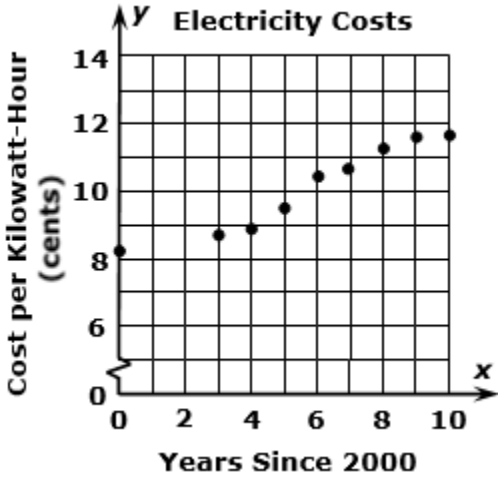


D.



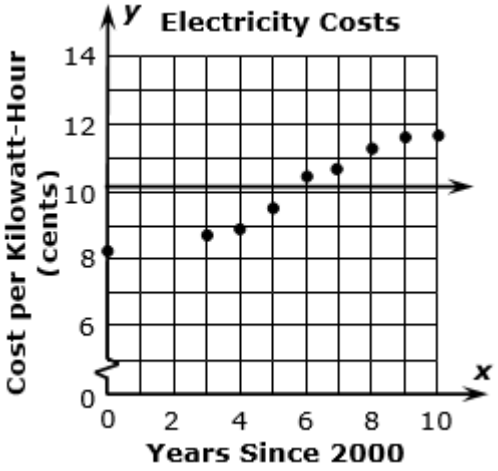
Directions: Answer the following question(s).

8 **A student researches the average cost of electricity, in cents per kilowatt–hour, in the United States since 2000 and creates the scatter plot below.**

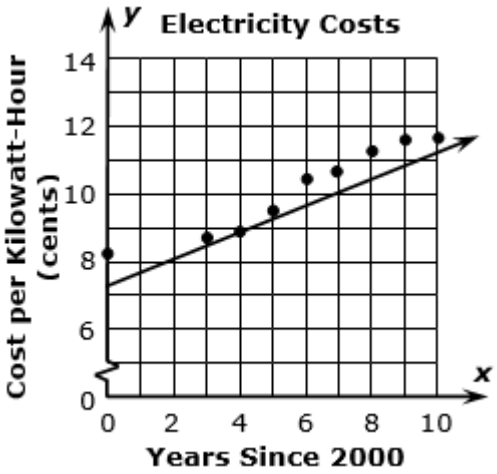


Which of the following *best* models a linear function fitted to the data in the scatter plot?

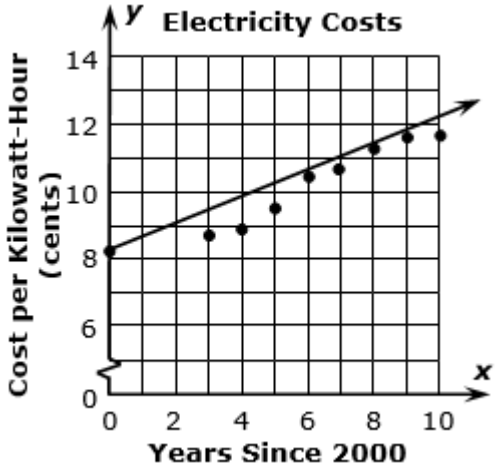
A.



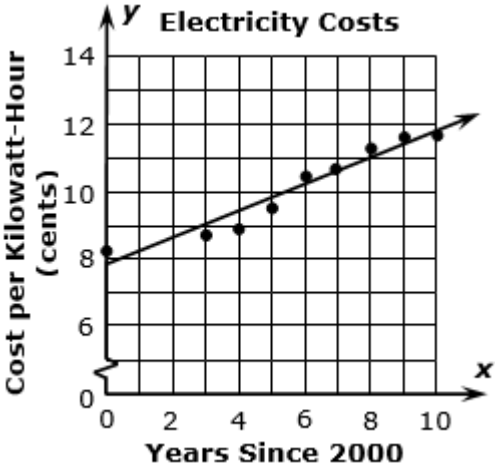
C.



B.

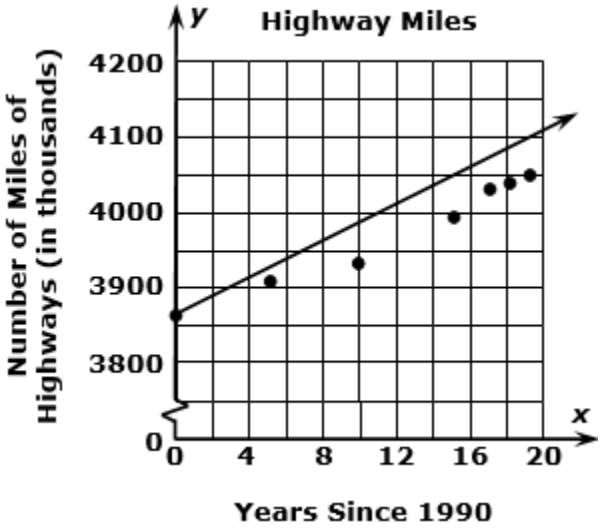


D.



Directions: Answer the following question(s).

9 **A student researches the number of miles in the U.S. highway system since 1990 and creates the scatter plot below. The student draws a line to fit a linear function for the data points on the scatter plot.**



Which of the following statements describes the adequacy of the line drawn by the student?

A. The line drawn by the student represents an adequate fit as the line passes through the first plotted data point.

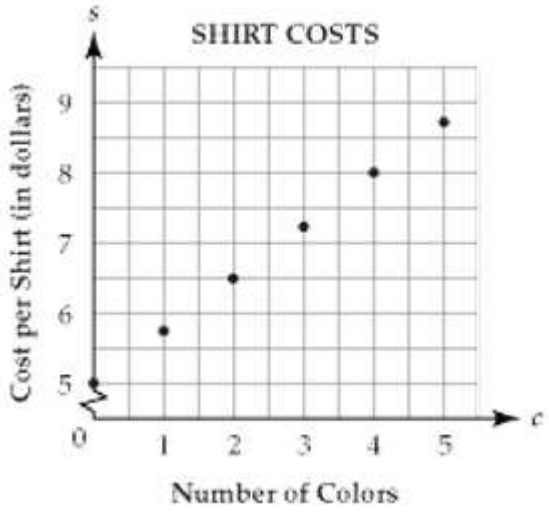
B. The line drawn by the student represents an adequate fit as the line shows the same linear trend as the data points.

C. The line drawn by the student does not represent an adequate fit as the line should be closer to more of the data points.

D. The line drawn by the student does not represent an adequate fit as the line should be below all of the data points, not above.

Directions: Answer the following question(s).

10 Tees for Teens is a store that sells shirts. The graph below represents the total cost per shirt based on the number of colors in the design.



Which of these equations represents the relationship between the cost per shirt (s) and the number of colors (c)?

A. $s = 0.75c + 5$

B. $s = 1.5c + 5$

C. $s = 5c + 0.75$

D. $s = 5c + 3$

11 This two-way table below shows the number of students with each hair color and eye color.

		Hair Color				
		Black	Brown	Red	Blond	Total
Eye Color	Brown	7	12	3	1	23
	Blue	2	8	2	9	21
	Hazel	2	5	1	1	9
	Green	1	3	1	2	7
	Total	12	28	7	13	60

What percent of students have blond hair and blue eyes?

A. 15%

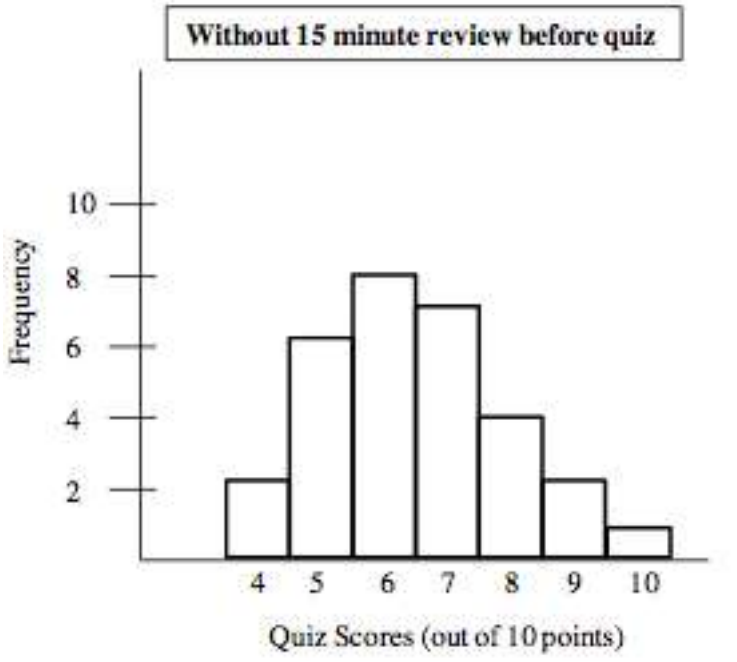
B. 69%

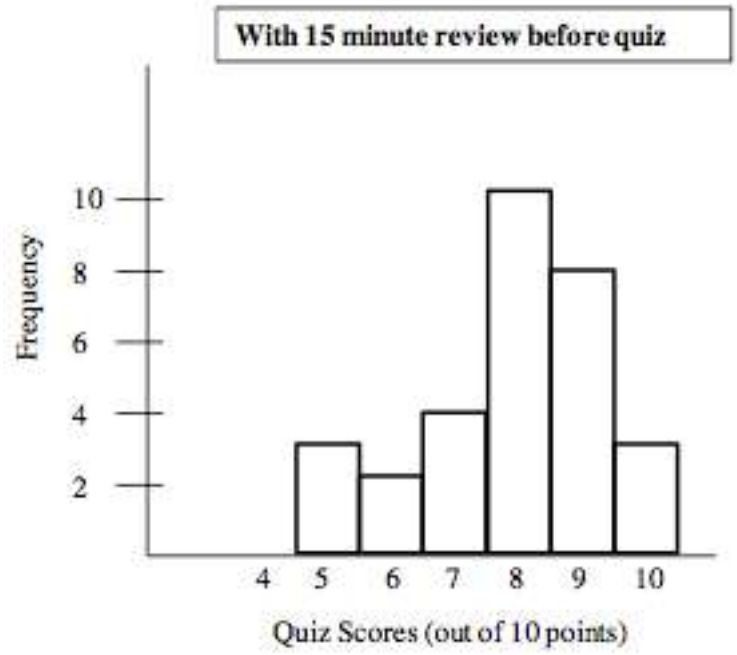
C. 17%

D. 43%

Directions: Answer the following question(s).

12 The histograms below show the distribution of quiz scores on a ten point math quiz with and without a fifteen minute review before the quiz.





Which statement describes the differences in the data?

A. There was a greater variety of scores **with** the 15 minute review.
B. The median of the scores **without** the review is 8.
C. The scores didn't improve **with** the 15 minute review.
D. The scores improved **with** the 15 minute review.

Directions: Answer the following question(s).

13 **A college professor surveyed his class to see how many hours each student studied. The professor used each student's grade with how many hours they studied to create a scatter plot of the data. He determined that the correlation coefficient was 0.90.**

Select the *true* statement based on the professor's correlation coefficient.

A. There is a weak correlation between the number of hours studied and the student's grade.

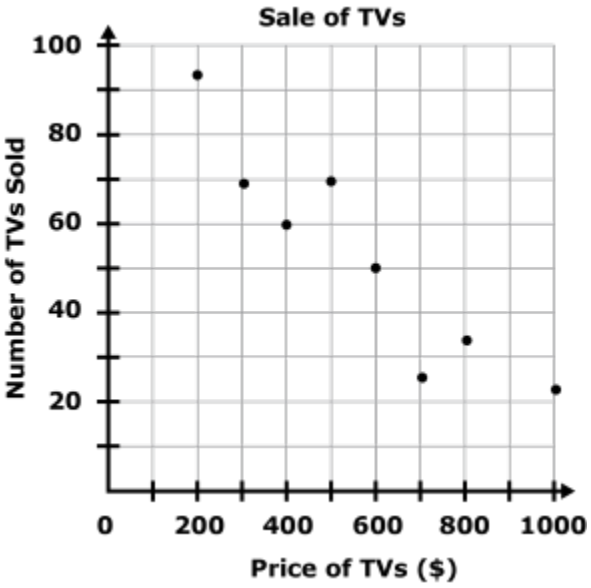
B. There is no correlation between the number of hours studied and the student's grade.

C. There is a strong correlation between the number of hours studied and the student's grade.

D. There is a negative correlation between the number of hours studied and the student's grade.

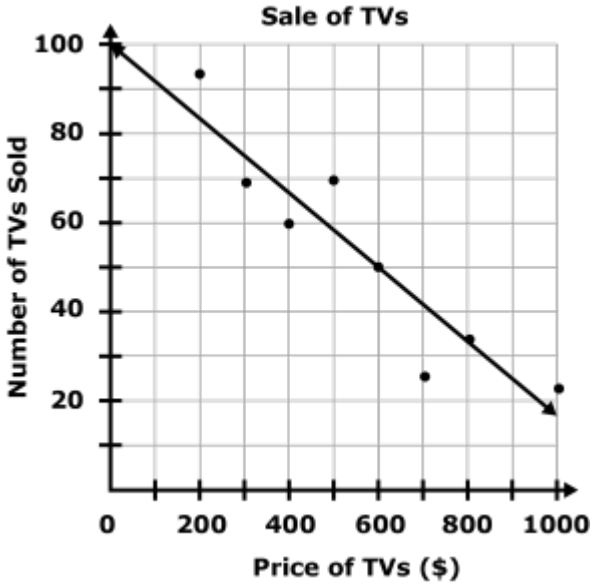
Directions: Answer the following question(s).

14 **A store manager records the price and number of TVs sold in a store. The data is shown in the scatter plot below.**

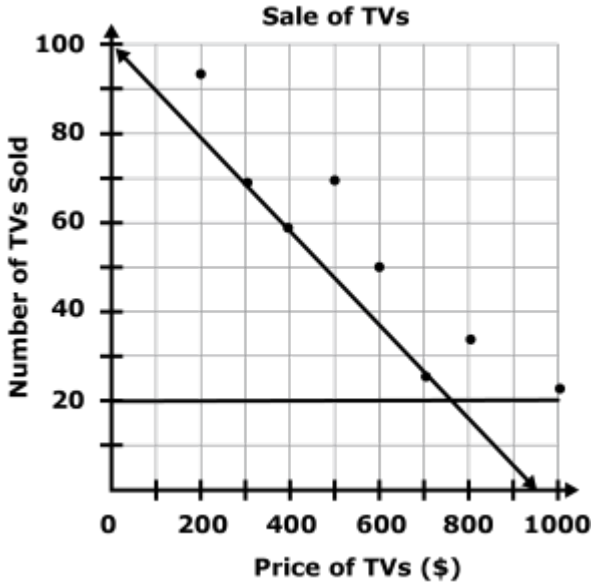


Which of the following scatter plots shows a line of best fit for these data?

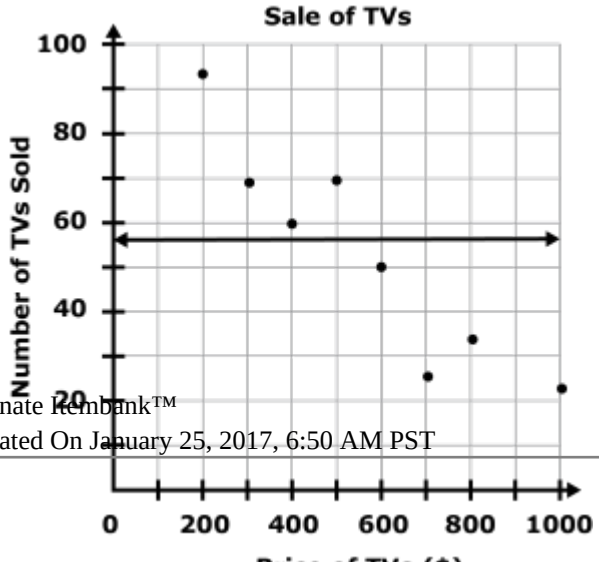
A.



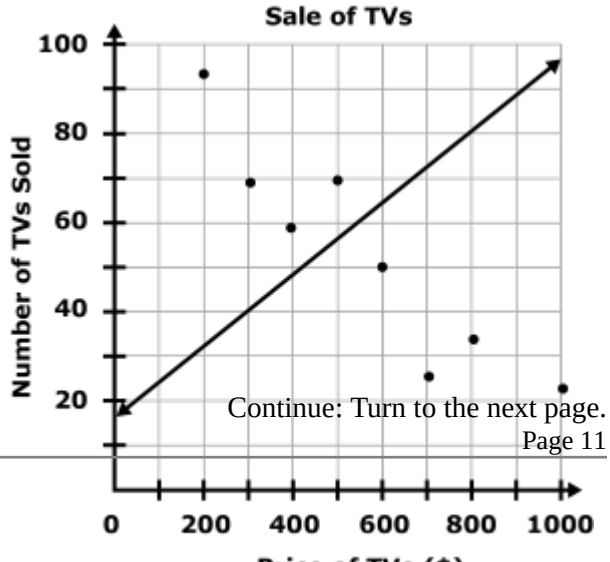
C.



B.



D.



Directions: Answer the following question(s).

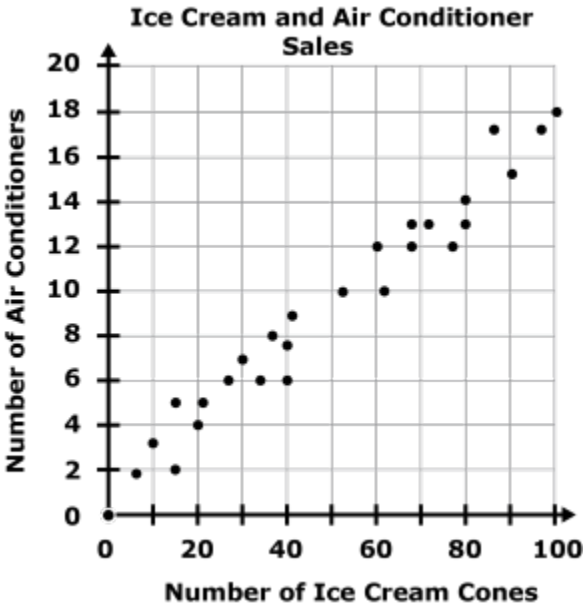
15 **An executive at a car company wants to examine the relationship between the amount of money the company spends on marketing and the number of cars sold. The scatter plot below shows this relationship.**

Which of the following equations *most likely* represents the line of best fit for the data shown in the scatter plot?

A. $y = 5x$
B. $y = 57{,}500$
C. $y = 5x + 35{,}250$
D. $y = 5x + 57{,}500$

Directions: Answer the following question(s).

16 **A store sells both ice cream cones and air conditioners. The store manager records the sales of these two items and creates the scatter plot shown below.**



Based on the scatter plot, which statement *best* interprets the relationship between the sales of ice cream cones and sales of air conditioners?

A. There is a correlation between the two variables but not causation.

B. There is both a correlation and causation between the two variables.

C. There is neither a correlation nor causation between the two variables.

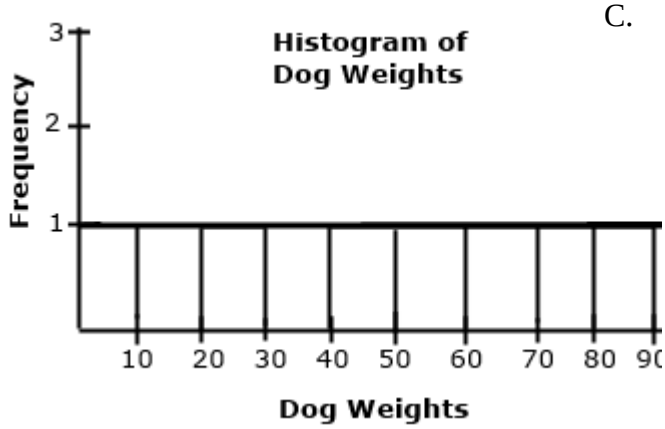
D. There is no correlation between the two variables, but there is causation.

Directions: Answer the following question(s).

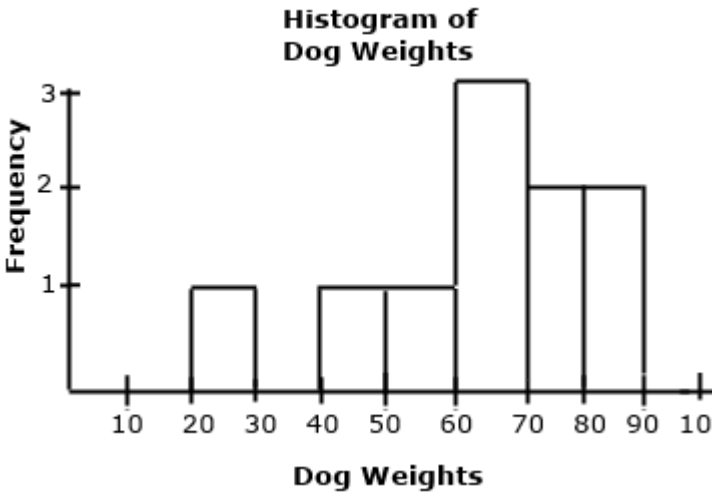
17 **Select the histogram that represents the given weights of a group of dogs.**

54, 24, 21, 56, 83, 42, 47, 65, 72, 86

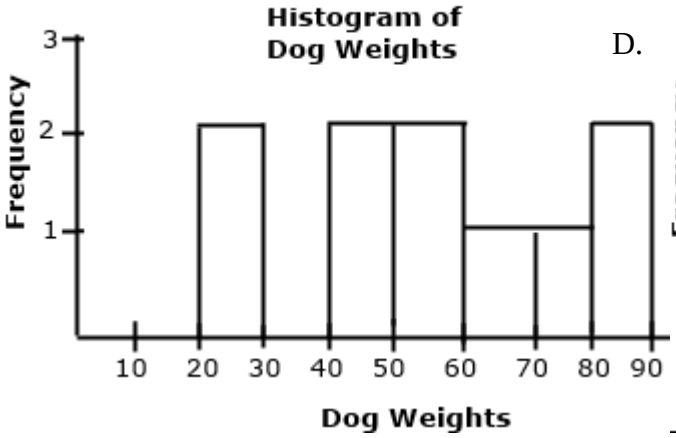
A.



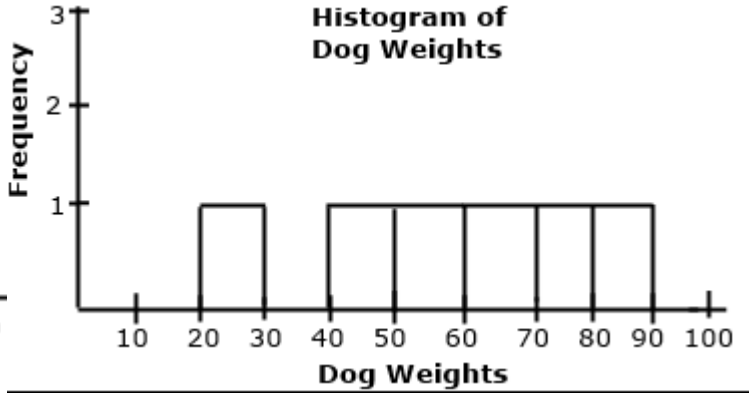
C.



B.



D.

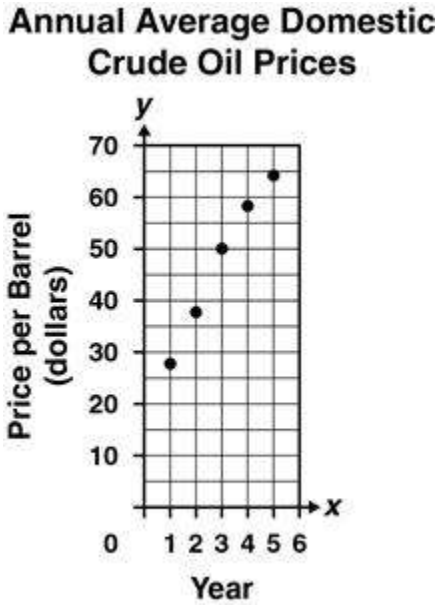


Directions: Answer the following question(s).

18 **The table and scatterplot show the price of a barrel of crude oil over five years.**

Annual Average Domestic Crude Oil Prices

Year	Price per Barrel (dollars)
1	27.69
2	37.66
3	50.04
4	58.30
5	64.20



The variable *x* represents time, in years, and *y* represents the price of crude oil per barrel, in dollars. According to the scatterplot, which equation BEST represents the relationship between the year and the price of crude oil?

A. $y = 0.1x - 2.0$

B. $y = 0.2x - 5.9$

C. $y = 9.4x + 19.5$

D. $y = 11.2x + 16.1$

Directions: Answer the following question(s).

19 **The manager at Renee's Foods took a survey to determine the price of milk at 10 other supermarkets in her area. These prices are shown below.**

$2.99	$3.19	$3.29	$2.99	$3.19
$2.79	$2.89	$2.99	$2.99	$2.99

At an 11th supermarket, the price of milk is $4.49. What does this outlier do to the data?

A. It skews the data to the right.
B. It increases the mode.
C. It increases the median.
D. It decreases the interquartile range.

20 **Miko conducted a survey to determine the relationship between the shoe size of a person and their reading ability. Which of the following is the best description of the relationship between the variables in the survey?**

A. correlation without causation
B. correlation and causation
C. causation without correlation
D. neither correlation nor causation

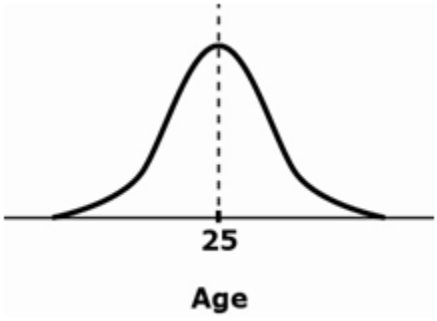
21 **According to the data in the table, which statement is true?**

Most Frequent Summer Olympic Sport Watched	Gymnastics	Swimming	Volleyball	Total
Men	0.05	0.22	0.23	0.50
Women	0.30	0.18	0.02	0.50
Total	0.35	0.40	0.25	1.00

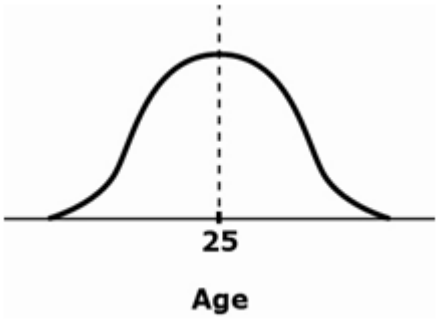
A. Fewer men chose volleyball than swimming.
B. More men than women chose gymnastics.
C. More women chose swimming than gymnastics.
D. More men than women chose swimming.

Directions: Answer the following question(s).

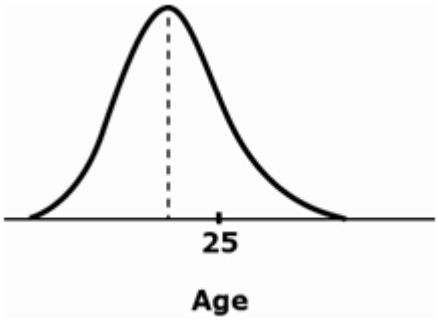
22 **The graph below represents a frequency distribution of ages in a defensive driving class. Which of the following represents a distribution with a smaller mean?**



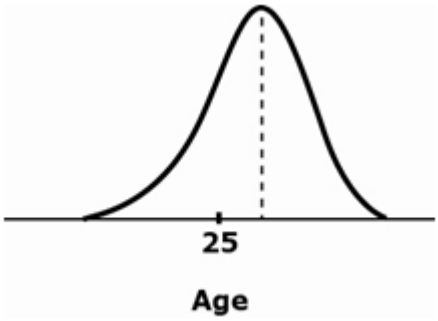
A.



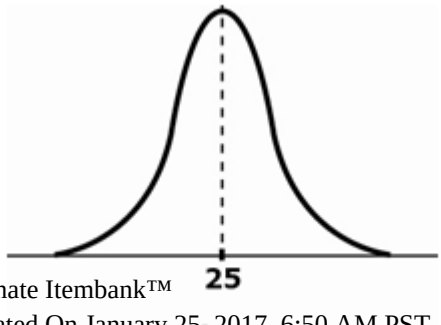
B.



C.

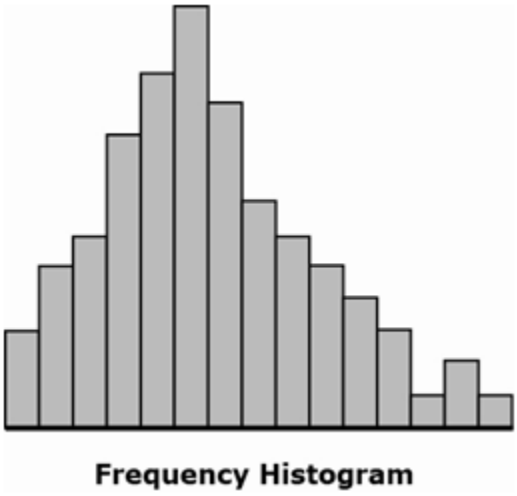


D.



Directions: Answer the following question(s).

23 **Compared to a graph of normally distributed data, the graph below shows a**



A. skew.
B. bell curve.
C. standard deviation.
D. range.

24 **A recent social survey asked whether respondents believed that Antarctic penguins were threatened. The responses are summarized in the table below.**

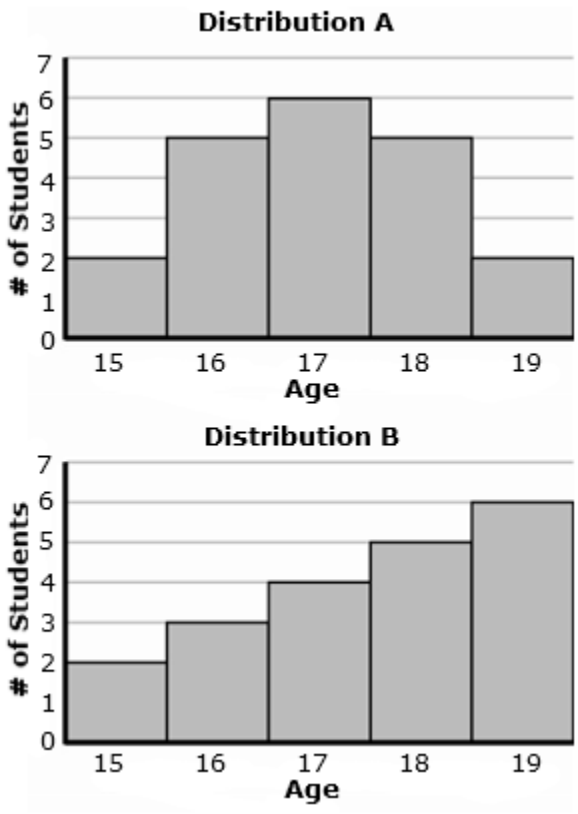
Answer	Male	Female	Total
A great deal	123	200	323
Some	150	164	314
Not at all	28	16	44
Total	301	380	681

A respondent is randomly selected among those who believe that penguins are threatened "a great deal." Approximately what is the probability that this respondent will be female?

A. 29%
B. 38%
C. 53%
D. 62%

Directions: Answer the following question(s).

25 **Two groups of students, Group A and Group B, have the age distributions shown below. Which statement about the distributions is true?**



A. Distribution B has a larger mean, but the medians of both distributions are the same.

B. Distribution B has both a larger mean and a larger median than distribution A.

C. Distribution B has a smaller mean, but the medians of both distributions are the same.

D. Distribution B has both a smaller mean and a smaller median than distribution A.

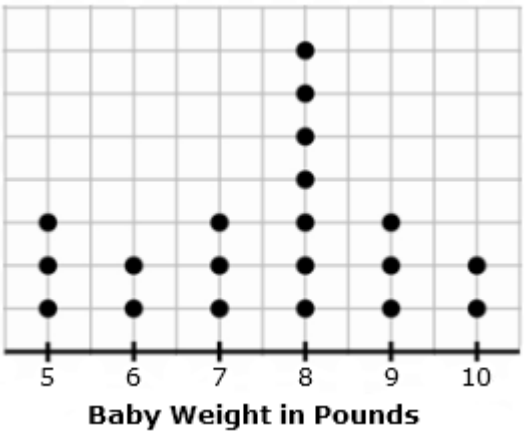
Directions: Answer the following question(s).

26 **Twenty babies were born in one week in the maternity ward of a hospital. The weight of each baby to the nearest pound is listed below.**

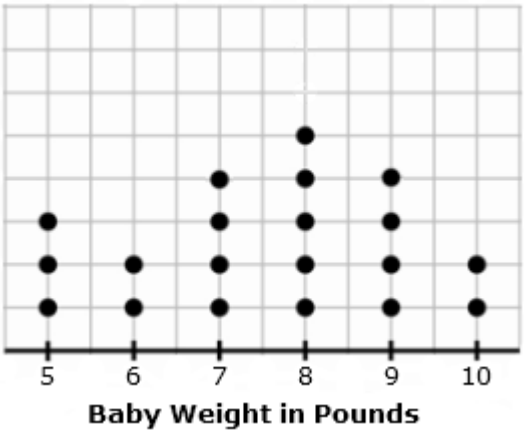
5, 5, 5, 6, 6, 7, 7, 7, 7, 8, 8, 8, 8, 8, 9, 9, 9, 9, 10, 10

Which of the following dot plots represents the distribution of the babies' weights that week?

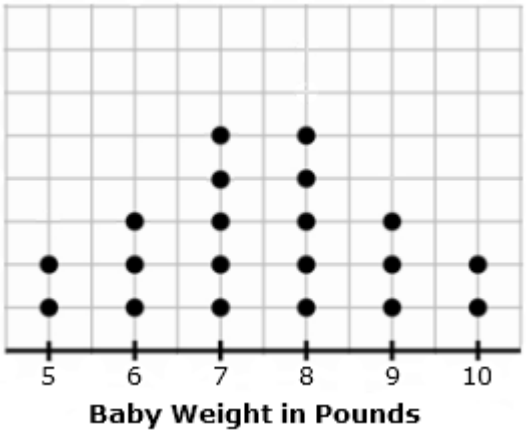
A.



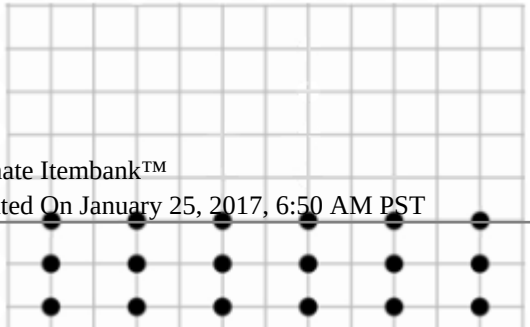
B.



C.

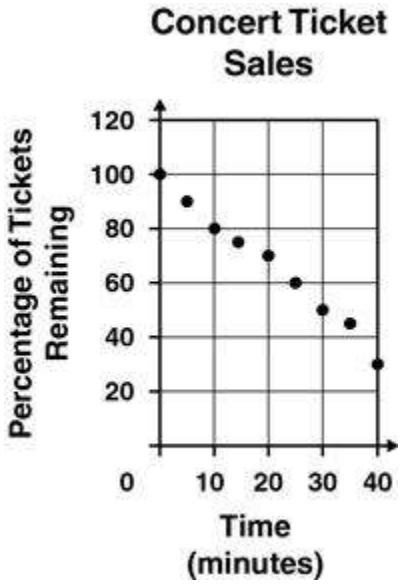


D.



Directions: Answer the following question(s).

27 **The sale of concert tickets began at 10 a.m. The scatterplot shows the relationship between time and the percentage of tickets remaining to be sold for the concert.**



Based on the scatterplot, which equation BEST models the relationship between time in minutes, *m*, and the percentage of tickets remaining to be sold, *p*?

A. $p = 100.0 - 2.0m$

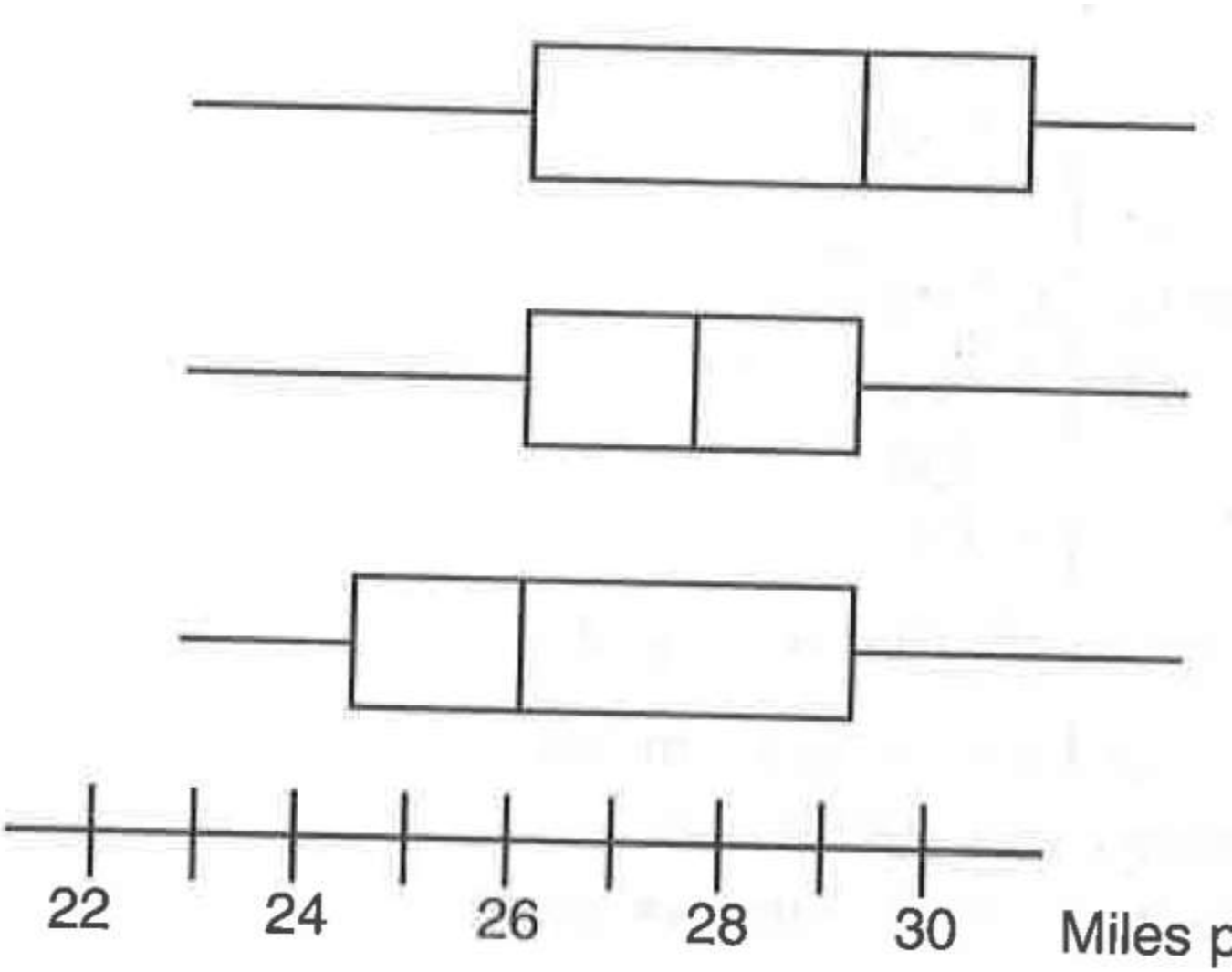
B. $p = 99.3 - 1.6m$

C. $p = 100.0m - 2.0$

D. $p = 99.3m - 1.6$

Directions: Answer the following question(s).

28 Consider the following parallel boxplots of gasoline mileage for three car makes:



Which of the following are true statements?

I. All three are symmetric.

II. The first is skewed to the left while the third is skewed to the right.

III. The second is skewed on both sides.

A. I only.
B. II only
C. III only
D. II and III
E. None of the above gives the complete set of true responses.

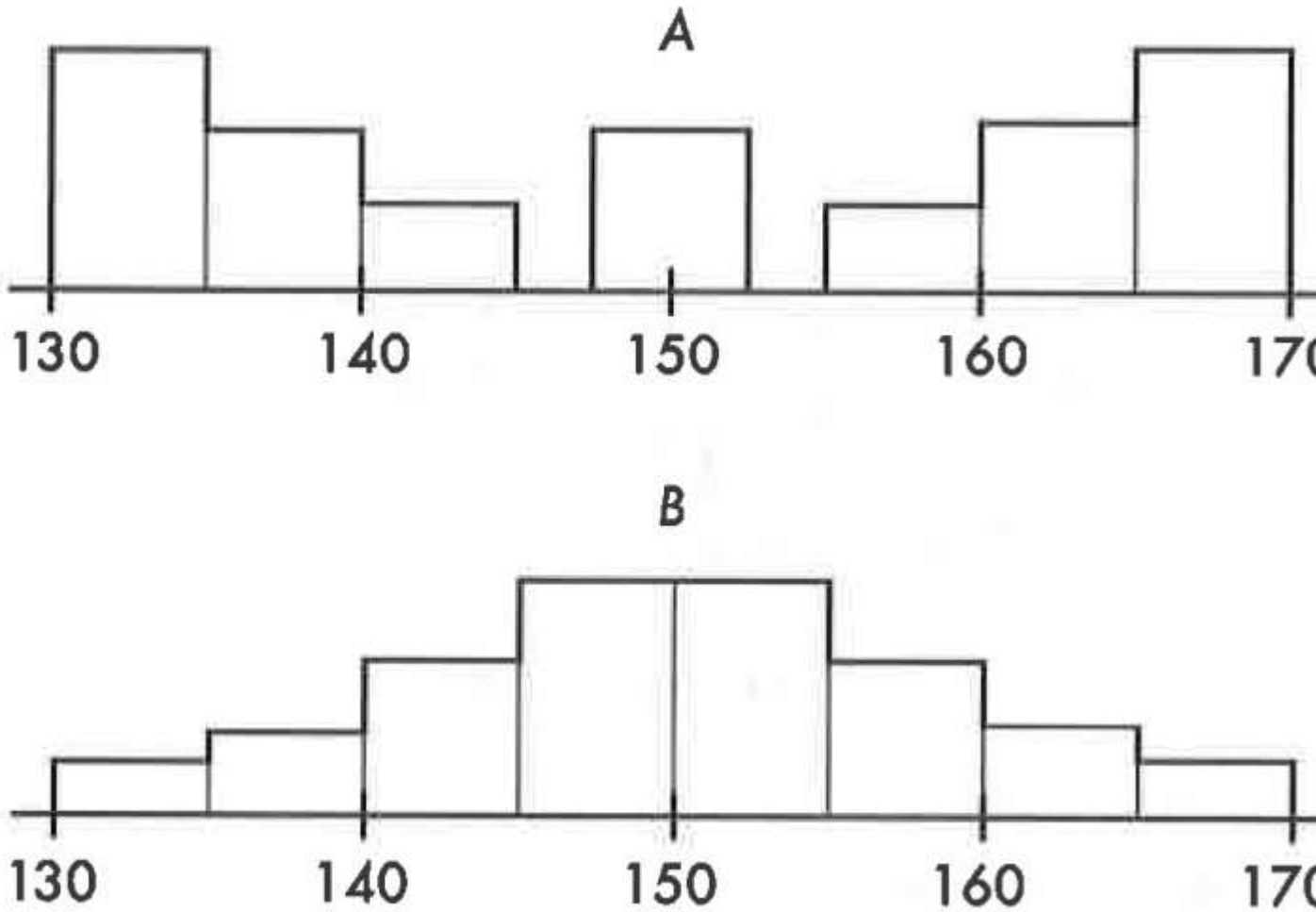
Directions: Answer the following question(s).

29 Which of the following statements is true about the histogram?

I.Both sets have the same mean.

II.Both sets have the same range.

III.Both sets have the same variance.



A. I only
B. I and II
C. I and III
D. I, II, and III
E. None of the above gives the complete set of true responses.

Directions: Answer the following question(s).

30 **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.

31 **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.

32 **Some of the students at a high school were surveyed to find out which location was preferred for a school dance. The results of the survey are shown in the table below.**

Preferences for Location of School Dance

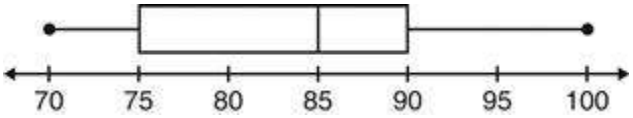
	School Gymnasium	Community Center	Hotel Ballroom	Total
Grade 9 Students	24	28	48	100
Grade 10 Students	21	25	54	100
Grade 11 Students	26	38	36	100
Grade 12 Students	15	17	68	100
Total	86	108	200	400

What percentage of the students surveyed were Grade 11 students who preferred the dance be held at a hotel ballroom?

A. 9%
B. 18%
C. 36%
D. 75%

Directions: Answer the following question(s).

33 **The plot below shows the distribution of grades for a test.**



If Jeff earned a score of 91 on the test, in which quartile does his test score fall?

A. first
B. second
C. third
D. fourth

34 **The two sets of data in the tables show the speeds at which different wild animals can run.**

Table One of Wild Animals' Running Speed

Animal	Speed (mph)
Cheetah	70
Elephant	25
Lion	50
Giraffe	32
Zebra	40
Moose	25

Table Two of Wild Animals' Running Speed

Animal	Speed (mph)
Elk	45
Grizzly Bear	30
Coyote	43
Mule Deer	35
Wild Turkey	15
Gray Fox	42

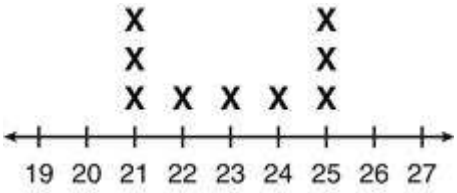
What is the difference between the lower quartile values for speeds in the two tables?

A. 5 miles per hour
B. 7 miles per hour
C. 10 miles per hour
D. 25 miles per hour

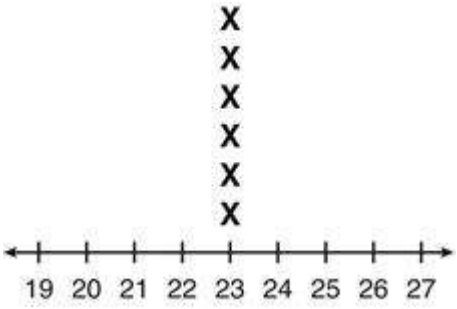
Directions: Answer the following question(s).

35 **Which line plot shows a data set that has an outlier?**

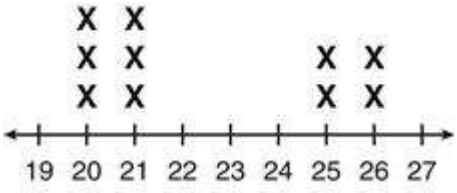
A.



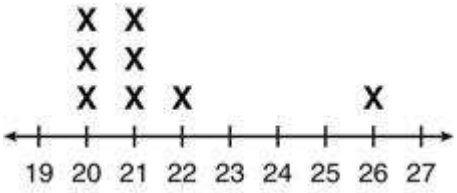
B.



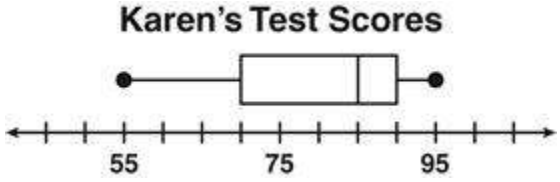
C.



D.



36 **Karen constructed the box-and-whisker plot below to show information about her first-semester test scores.**

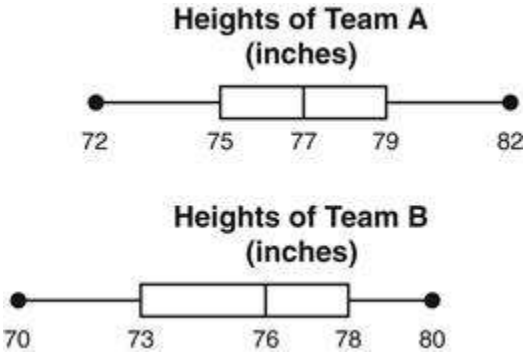


What was Karen's median test score?

A. 70
B. 85
C. 90
D. 95

Directions: Answer the following question(s).

37 **The box-and-whisker plots below show the distribution of the heights, in inches, of the members of two basketball teams.**



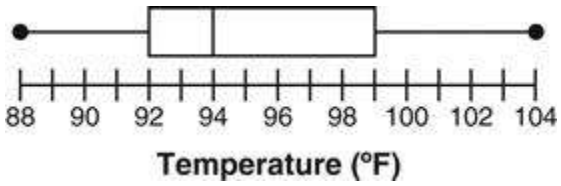
Which statement is true?

A. The median height of Team A is equal to the median height of Team B.
B. The shortest player on Team B is 2 inches taller than the shortest player on Team A.
C. The range of the heights of Team A is equal to the range of the heights of Team B.
D. The tallest player on Team A is 2 inches shorter than the tallest player on Team B.

38 **What measure is always equal to the 50th percentile of a data set?**

A. first quartile
B. mean
C. median
D. mode

39 **Sarita recorded the high temperatures in her town for the month of July and used her data to make this box-and-whisker plot.**

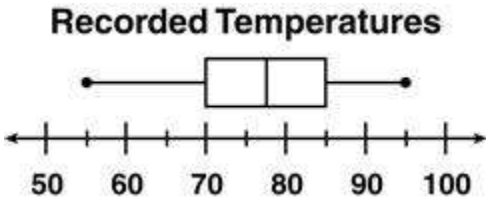


Which statement must be true?

A. The mean temperature of the month was 94°.
B. At least half of the temperatures were 94° or greater.
C. There were fewer temperatures between 92° and 94° than between 94° and 99°.
D. There were more temperatures between 99° and 104° than between 88° and 92°.

Directions: Answer the following question(s).

40 **Jerry recorded the outdoor temperature at noon on the first day of each month for one year. He made the box-and-whisker plot below to display his data.**



What is the range of temperatures?

A. 40
B. 55
C. 70
D. 95

41 **The number of runs scored by the Stars for six games is shown below.**

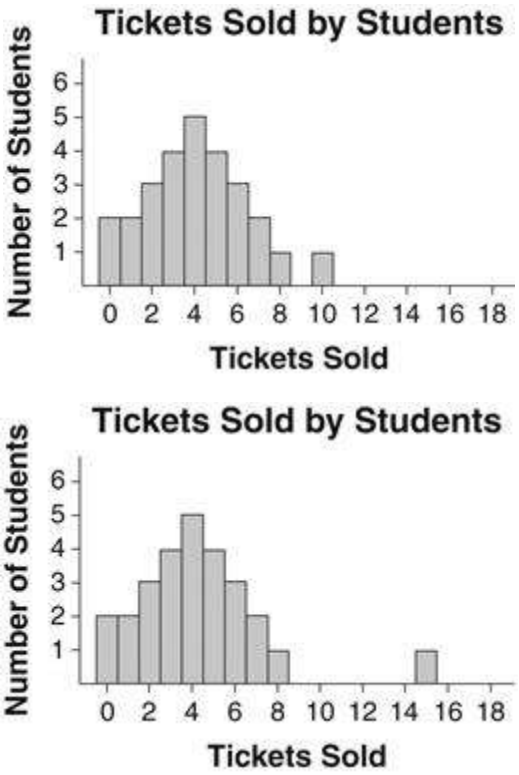
4, 9, 2, 4, 1, 6

If the Stars scored 14 runs in their seventh game, which of the following statements is true?

A. The mean and the median both increase.
B. The median and the mean both remain the same.
C. The mean increases and the median remains the same.
D. The median increases and the mean remains the same.

Directions: Answer the following question(s).

42 **What is the difference between the histograms below?**



A. the maximum number of tickets sold
B. the minimum number of tickets sold
C. the median number of tickets sold
D. the mode number of tickets sold