

Name: _____

Date: _____

1.

A student recorded the high temperature on September 15 in two different cities for a random sample of 10 out of the last 100 years. The data are shown in this table.

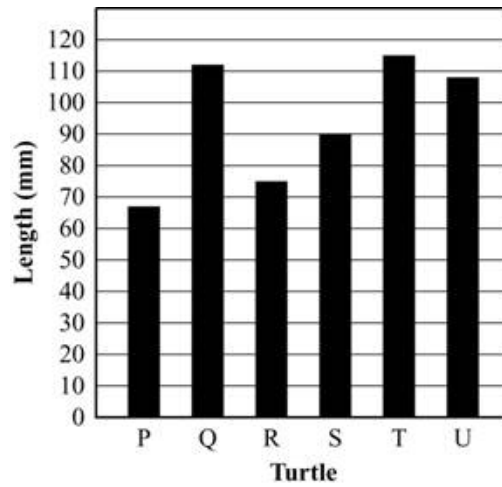
High Temperatures on September 15

City P	89	72	64	84	87	76	80	78	82	78
City Q	79	62	54	74	68	66	70	68	72	68

How does the standard deviation of the data for City P compare to the standard deviation of the data for City Q?

- A. The standard deviations of the data for the two cities are the same.
 - B. The standard deviation for City P is greater than the standard deviation for City Q by 10.
 - C. The standard deviation for City P is greater than the standard deviation for City Q by $\sqrt{10}$.
 - D. The standard deviation for City P is less than the standard deviation for City Q by $\sqrt{10}$.
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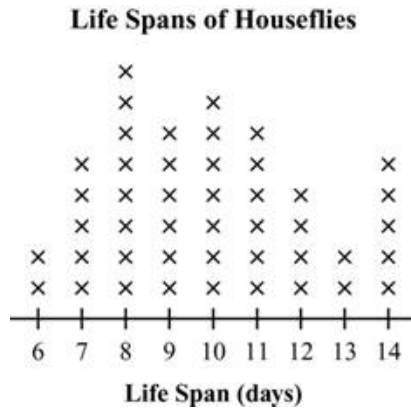
2. This graph shows the lengths of a sample of Chinese box turtles.



Based on these data, what is the estimated standard deviation in length of the population from which the sample was drawn?

- A. 18.6 mm
 - B. 20.3 mm
 - C. 45.4 mm
 - D. 49.0 mm
-

3. This graph shows the life spans of a sample of 45 houseflies of the same species.



Which is the best estimate of the standard deviation of this data set?

- A. 1.0 days
- B. 2.7 days
- C. 7.3 days
- D. 9.9 days

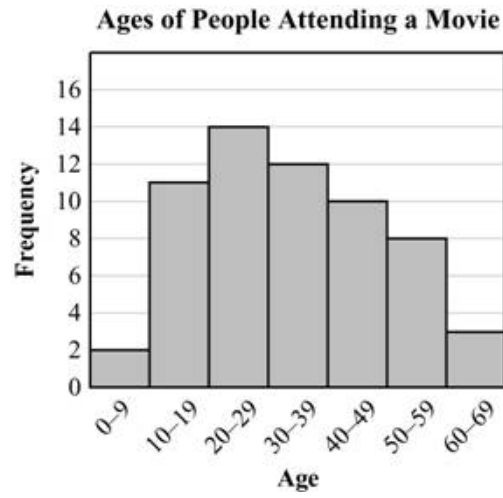
4. This list shows the average monthly electric bills, in whole dollars, for a random sample of 10 households in a county.

67, 85, 79, 46, 21, 52, 68, 77, 33, 64

Based on these data, what is the standard deviation, in dollars, of the monthly electric bills for the whole population of households in the county?

- A. 6.9
- B. 8.1
- C. 19.8
- D. 20.8

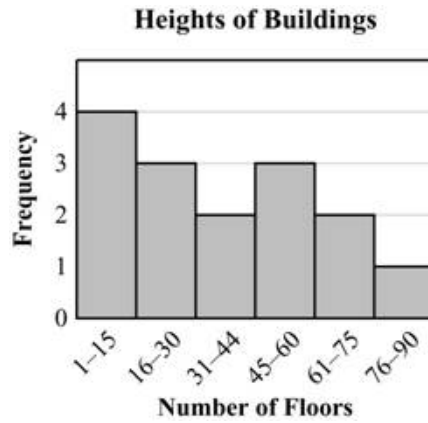
5. This histogram shows the distribution of ages for a random sample of 60 people attending a movie.



Which is the best estimate of the standard deviation of this data set?

- A. 5
 - B. 16
 - C. 60
 - D. 240
-

6. This histogram shows the numbers of floors of a random sample of 15 buildings in the downtown area of a large city.



Which is the best estimate of the standard deviation of this data set?

- A. 15
 - B. 25
 - C. 63
 - D. 94
-

7. The salaries of a group of 60 workers in one year had a mean of \$34,100 and a standard deviation of \$7,200. At the end of the year, each worker received a bonus of \$2,500.

What are the mean and standard deviation of the salaries after the bonus is included?

A.

Mean	Standard Deviation
\$34,100	$\$7,200 + \frac{\$2,500}{\sqrt{60}}$

B.

Mean	Standard Deviation
$\$34,100 + \frac{\$2,500}{60}$	\$7,200

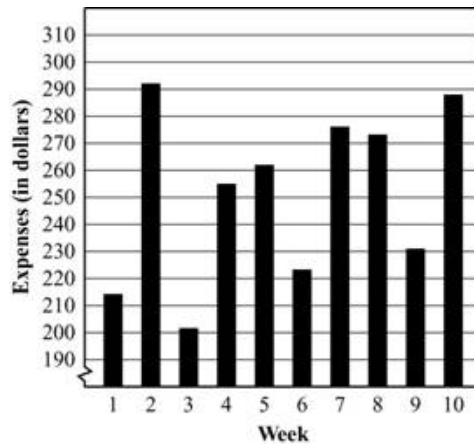
C.

Mean	Standard Deviation
$\$34,100 + \$2,500$	\$7,200

D.

Mean	Standard Deviation
$\$34,100 + \$2,500$	$\$7,200 + \frac{\$2,500}{\sqrt{60}}$

8. Melissa recorded her weekly expenses for 10 weeks. Her data are shown in this graph.



Melissa observes that the range of her data is \$91 and the standard deviation is \$31.97.

Her total expenses for weeks 11 and 12 are \$192 and \$303. If these values are added to the data, how will the range and standard deviation change?

- A. The range and standard deviation will both increase by \$20.
 - B. The range will remain the same, but the standard deviation will increase by \$5.43.
 - C. The range will increase by \$20, but the standard deviation will remain the same.
 - D. The range will increase by \$20, and the standard deviation will increase by \$5.43.
-

9. A car dealer has four locations in a city. This table shows the number of cars sold each week by each location for a period of 5 weeks.

Numbers of Cars Sold

	Location			
	A	B	C	D
Week 1	33	26	25	26
Week 2	12	23	12	17
Week 3	18	25	14	36
Week 4	27	28	18	22
Week 5	32	30	22	15

Which location has the LEAST variation in weekly sales?

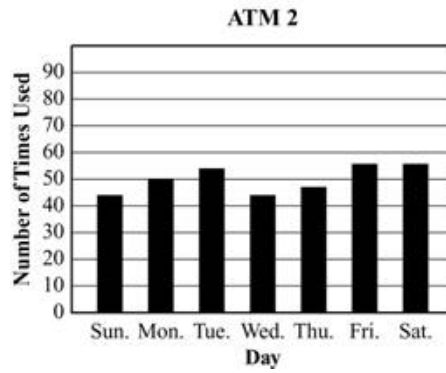
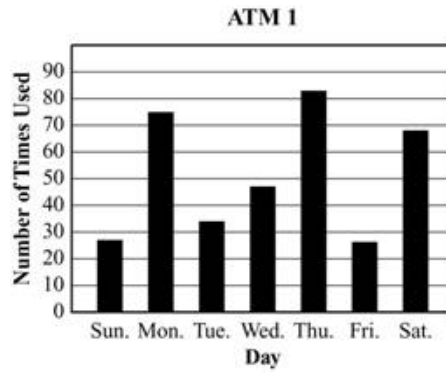
- A. Location A
- B. Location B
- C. Location C
- D. Location D

10. Two football teams have played the same number of games. Team P has scored a mean of 23.6 points per game with a standard deviation of 4.7 points. Team Q has scored a mean of 23.6 points per game with a standard deviation of 12.1 points.

Which statement can be justified based on this information?

- A. Team P typically scores more points than Team Q.
- B. Team P typically scores fewer points than Team Q.
- C. The number of points scored per game is more consistent for Team P than for Team Q.
- D. The number of points scored per game is less consistent for Team P than for Team Q.

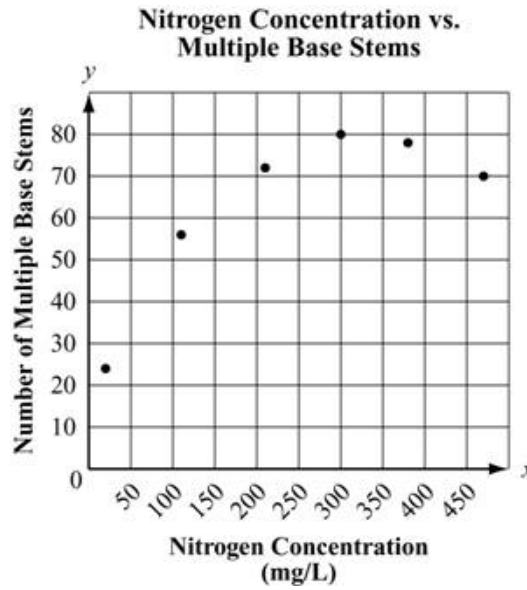
11. These graphs show usage statistics for two automated teller machines (ATMs) at a bank last week.



Which statement is BEST supported by these data?

- A. ATM 1 is used more consistently than ATM 2.
 - B. ATM 2 is used more consistently than ATM 1.
 - C. ATM 1 is used more frequently every day than ATM 2.
 - D. ATM 2 is used more frequently every day than ATM 1.
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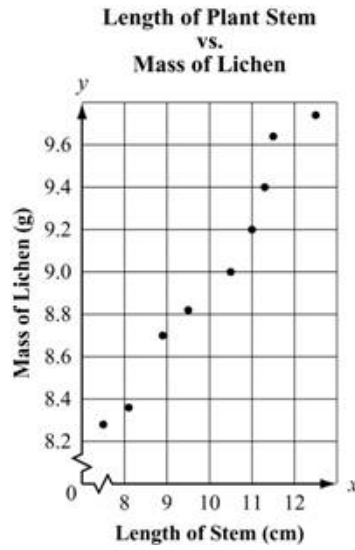
12. This graph shows a set of data from a study of the nitrogen concentration in plants with multiple base stems.



Which equation BEST fits the data in the graph?

- A. $y = 0.38x + 18.08$
 - B. $y = -0.38x + 18.08$
 - C. $y = 0.00058x^2 + 0.38x + 18.08$
 - D. $y = -0.00058x^2 + 0.38x + 18.08$
-

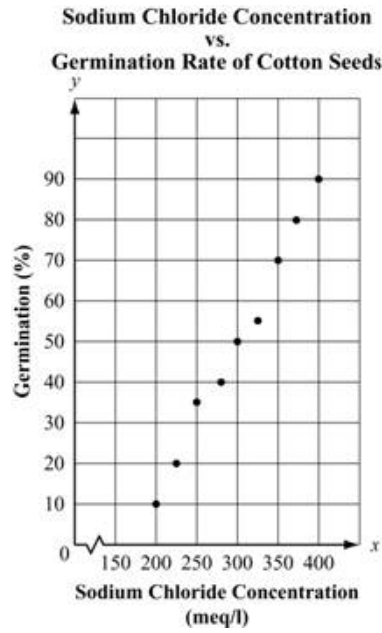
13. This scatter plot shows the relationship between the length of some plant stems that are covered by lichen, and the mass of the lichen.



What is the approximate slope of the median-median line?

- A. 0.23
- B. 0.35
- C. 0.64
- D. 0.88

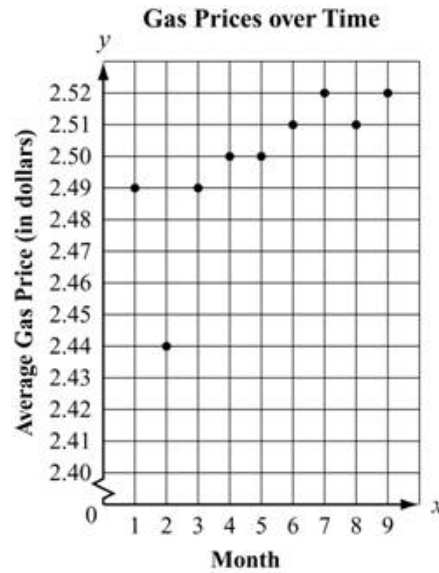
14. This scatter plot shows the relationship between the sodium chloride concentration in a soil sample and the germination rate of cotton seeds in that soil.



What is the equation of the median-median line?

- A. $y = 0.4x - 70$
 - B. $y = 0.4x - 248$
 - C. $y = 0.69x - 70$
 - D. $y = 70x - 0.4$
-

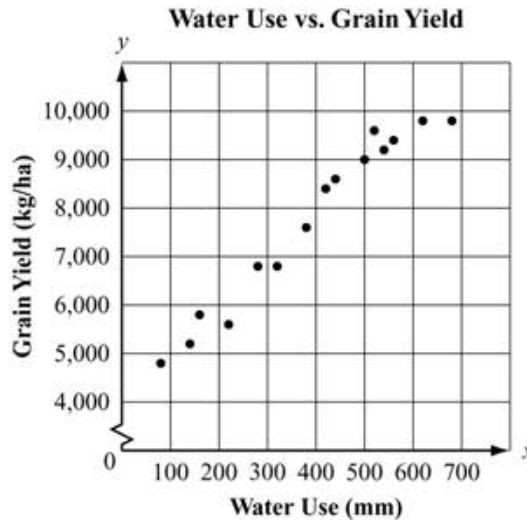
15. This graph shows the average gas price per gallon each month in a city over a period of nine months.



Which statement explains why the regression line is **LESS** suitable than the median-median line as a model for these data?

- A. The data points are not evenly spaced.
 - B. The least-squares regression line does not pass through the origin.
 - C. quadratic model fits the data better than a linear model.
 - D. The data includes an outlier that will affect the slope of the least-squares regression line.
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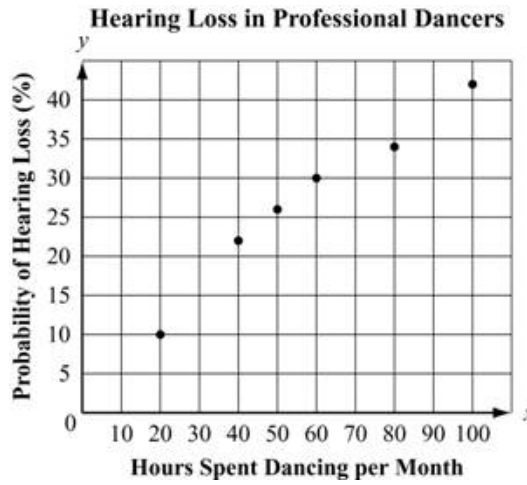
16. This graph shows the relationship between the usage of water in cultivating grain and the grain yield.



Which is the best estimate of the slope of the median-median line for these data?

- A. 8
- B. 10
- C. 12
- D. 14

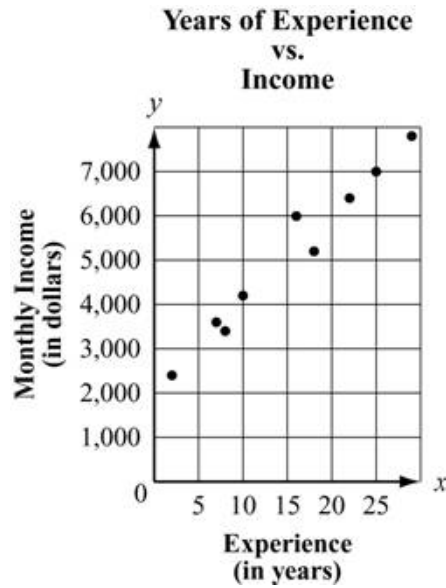
17. This graph shows a set of data from a study of hearing loss among professional dancers over a period of five years.



Based on an estimated line of best fit, what is the probability of hearing loss for a dancer who dances 70 hours per month?

- A. 30%
 - B. 32%
 - C. 34%
 - D. 36%
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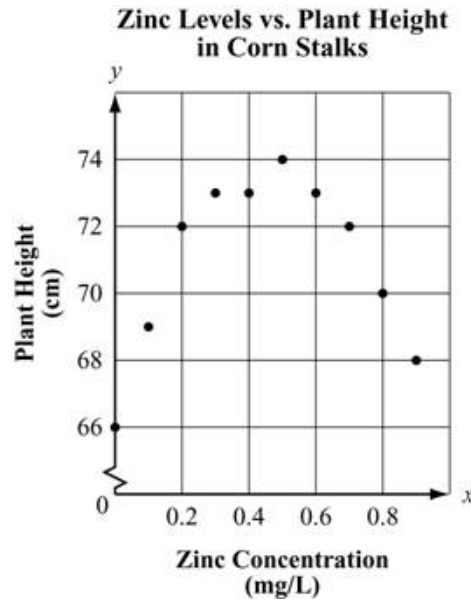
18. A payroll specialist at a company made this graph to show the relationship between experience at the company and monthly income for a random sample of employees of the company.



What is the equation of the median-median line for these data?

- A. $y = 200x + 2000$
 - B. $y = 200x + 5200$
 - C. $y = 2000x + 200$
 - D. $y = 2000x + 5200$
-

19. This scatter plot shows how the average height of a corn stalk varies with the concentration of zinc in the corn stalk.



Which equation **BEST** models the relationship between zinc concentration, x , and plant height, y ?

- A. $y = -33.33x^2 + 31.57x + 66.29$
- B. $y = 33.33x^2 + 31.57x + 66.29$
- C. $y = 1.575x + 70.29$
- D. $y = -1.575x - 70.29$

Answer Key

1. A) The standard deviations of the data for the two cities are the same.

2. B) 20.3 mm

3. B) 2.7 days

4. D) 20.8

5. B) 16

6. B) 25

7. C)

Mean	Standard Deviation
\$34,100 + \$2,500	\$7,200

8. D) The range will increase by \$20, and the standard deviation will increase by \$5.43.

9. B) Location B

10. C) The number of points scored per game is more consistent for Team P than for Team Q.

11. B) ATM 2 is used more consistently than ATM 1.

12. D) $y = -0.00058x^2 + 0.38x + 18.08$

13. B) 0.35

14. A) $y = 0.4x - 70$

15. D) The data includes an outlier that will affect the slope of the least-squares regression line.

16. B) 10

17. B) 32%

18. A) $y = 200x + 2000$

19. A) $y = -33.33x^2 + 31.57x + 66.29$