Level 4: Statistics and Probability Pretest Answer Key

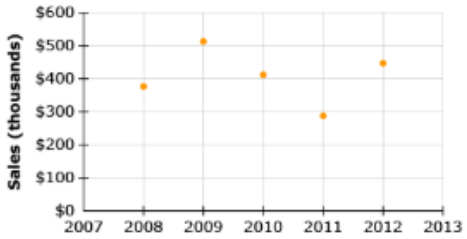
Question 1:

The Marketing Director for a small company is preparing an advertising campaign, and wants to compare the size of the advertising budget for previous campaigns and the amount of sales generated. The table below shows the data for the last six campaigns.

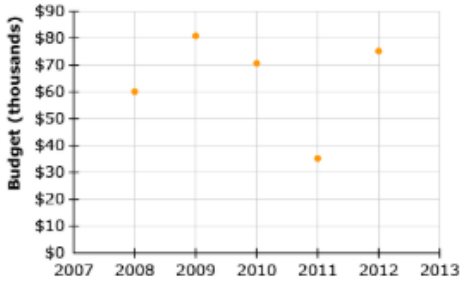
Year	Advertising Budget	Sales
2008	$60,000	$375,000
2009	$80,000	$510,000
2010	$70,000	$415,000
2011	$35,000	$285,000
2012	$75,000	$450,000

Which scatter plot could be the one that the marketing director made, and what is the relationship between the advertising budget and sales?

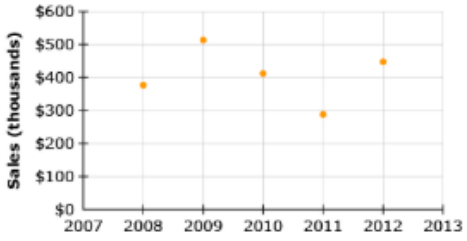
a. negative linear association



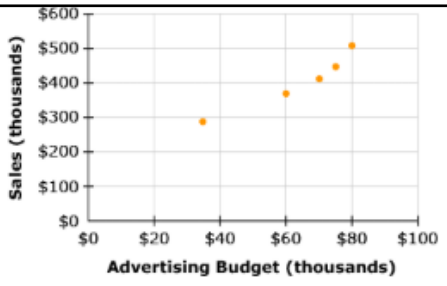
b. positive linear association



c. no association



d. positive linear association



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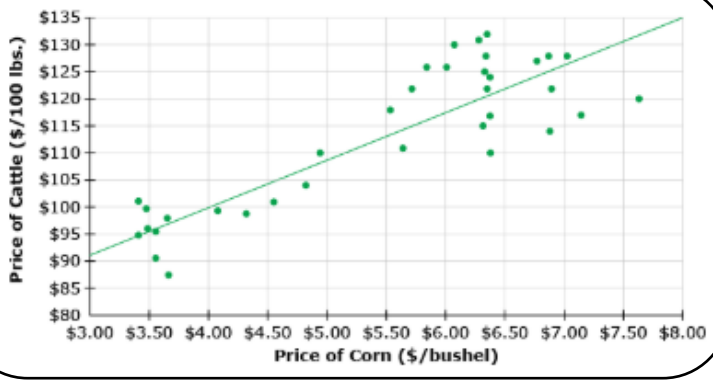
Question 2:

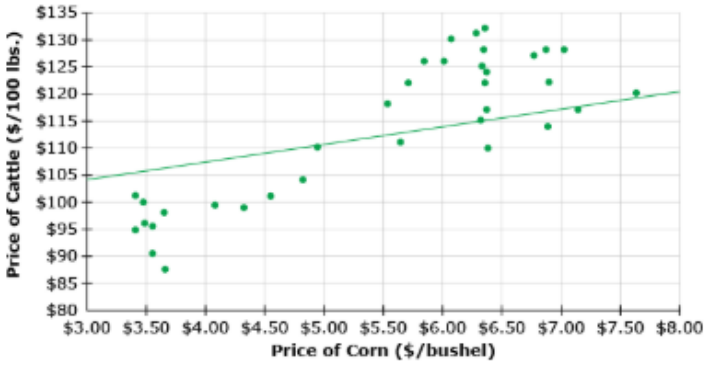
A commodities trader compares the price of corn to the price of cattle to look for a relationship.

Which graph shows a line that **best** fits the data?

a.

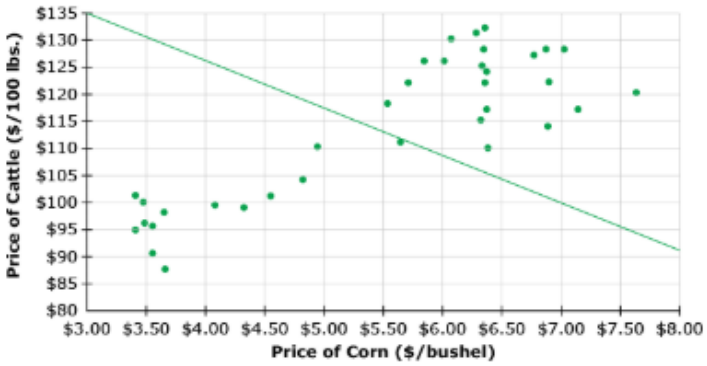


b.



c.

d.



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Question 3:

An object was purchased in 2005. The equation below shows the value, y, of the object x years after its purchase.

$y = 7.35x + 9.15$

Based on the equation, in what year will the object be worth $90?

2016

Question 4:

An object was purchased in 2005. The equation below shows the value, y, of the object x years after its purchase.

$y = 7.35x + 9.15$.

Based on the equation, identify all of the following statements that are true.

- [ ] In 2012, the object will be worth $97.35.
- [ ] In 2011, the object will be worth $53.25.
- [ ] In 2010, the object will be worth $45.90.
- [ ] In 2009, the object will be worth $43.95.
- [ ] In 2008, the object will be worth $31.20

Question 5:

A financial planner is trying to determine whether ownership of an individual retirement account (IRA) is linked to a person being prepared with a will. He surveys his clients and constructs the following table.

	Has an IRA		
Has drawn up a will		Yes	No
	Yes	26	24
	No	12	38

Which statement is a reasonable conclusion based on the survey results?

a. Someone who has drawn up a will is less likely to have an IRA.

b. Someone who has an IRA is more likely to have drawn up a will.

c. Someone who has an IRA is less likely to have drawn up a will.

d. There is no link between owning an IRA and having drawn up a will.

Continue

Question 6:

A nurse practitioner is investigating the effects of reading nutritional labels. She surveys patients about how much they pay attention to these labels, and notes whether they meet the criteria for being overweight. Using these observations, she constructs the following table.

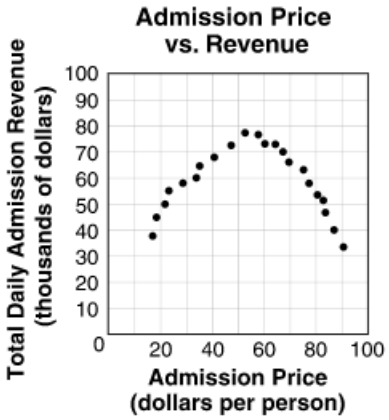
	Attention to food labels		
Overweight		Yes	No
	Yes	4	20
	No	26	30

Which of the following statements is supported by the data? (Mark all statements that are supported.)

- [ ] 20% of those who qualify as overweight pay a lot of attention to food labels.
- [ ] 40% of those who pay little attention to labels qualify as overweight.
- [ ] Patients who pay more attention to food labels are less likely to be overweight.
- [ ] Patients who are overweight are more likely to pay greater attention to food labels.
- [ ] There is not a strong link between reading labels and being overweight.

Question 7:

The scatter plot below shows how the total admission revenue at an amusement park is related to the admission price.



Which of the following best describes the relationship between the variables shown in the scatter plot?

a. no association

b. nonlinear association

c. positive linear association

d. negative linear association

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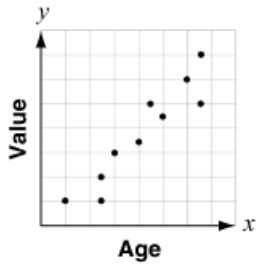
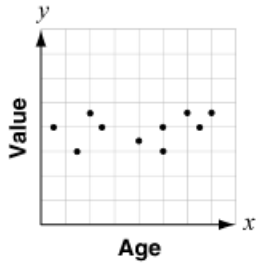
Question 8:

A used car dealer made a scatter plot showing the ages and values of 10 cars. The scatter plot showed a negative correlation between how old the cars were and their values. Which scatter plot could be the one the car dealer made?

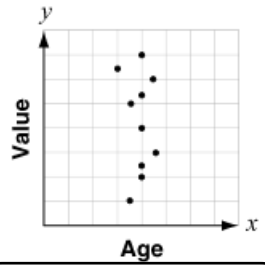
a.



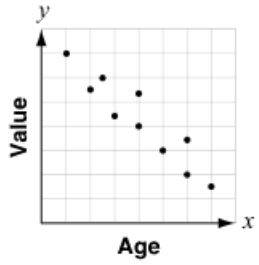
b.



c.



d.



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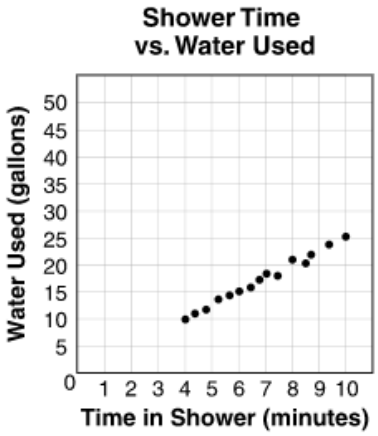
Question 9:

The scatter plot below shows the relationship between the length of time different people spent in t shower and the amount of water they used.



Which equation most closely describes the line of best fit for the data?

a. $y = 2.5x$

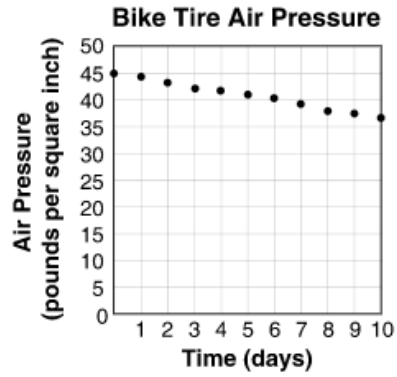
b. $y = 25x$

c. $y = 2.5x + 10$

d. $y = 25x + 10$

Question 10:

One of Joshua's bike tires has a slow air leak. The graph below shows how the air pressure, in pounds per square inch (psi) in the tire is changing over time.



If the trend continues, which is the best prediction for the air pressure in the tire on day 30?

a. 15 psi

b. 20 psi

c. 25 psi

d. 30 psi

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Question 11:

An object was purchased in 2005. The equation below shows the value, y, of the object $x$years after 2005.

$y = 7.35x + 9.15$

Based on the equation, which statement is true?

a. The cost was $7.35 in 2005 and is increasing by $9.15 per year.

b. The cost was $7.35 in 2005 and is decreasing by $9.15 per year.

c. The cost was $9.15 in 2005 and is increasing by $7.35 per year.

d. The cost was $9.15 in 2005 and is decreasing by $7.35 per year.

Question 12:

Fifty students participated in a study investigating whether frequent texting is linked to frequent television viewing. The results are summarized in the two-way table below.

	Frequent Television Viewing?		
Frequent Texting?		Yes	No
	Yes	20	15
	No	9	6

Which of the following describes whether frequent texting is linked to frequent television viewing?

a. Yes, because $\frac{29}{50}$ is much greater than $\frac{21}{50}$.

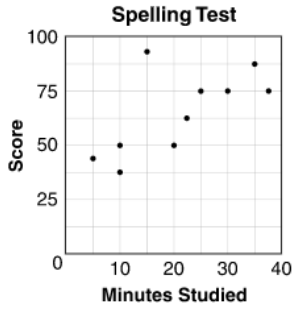
b. Yes, because $\frac{35}{50}$ is much greater than $\frac{15}{50}$.

c. No, because $\frac{20}{35}$ is approximately equal to $\frac{15}{35}$.

d. No, because $\frac{20}{35}$ is approximately equal to $\frac{9}{15}$.

Question 13:

Ten students studied a list of spelling words for different amounts of time. Then they took a test. The graph below shows the results.



There is one student who represents an outlier in the data. How many minutes did that student study?

15 minutes

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Question 14:

The equation below shows the number of barrels, y, of crude oil produced by an oil well in x days.

$y = 8x$

According to the equation, how many days does it take the oil well to produce 96 barrels of crude oil?

12 days

Question 15:

A scientist compared the temperature change and percent humidity before several rainstorms. He wrote the equation below to show the relationship between the change in temperature (x) in degrees Fahrenheit and the change in percent humidity (y).

$y = x + 45$

Based on the equation, as the temperature changes by 1°F, by what percent does the humidity increase?

1 %

Stop