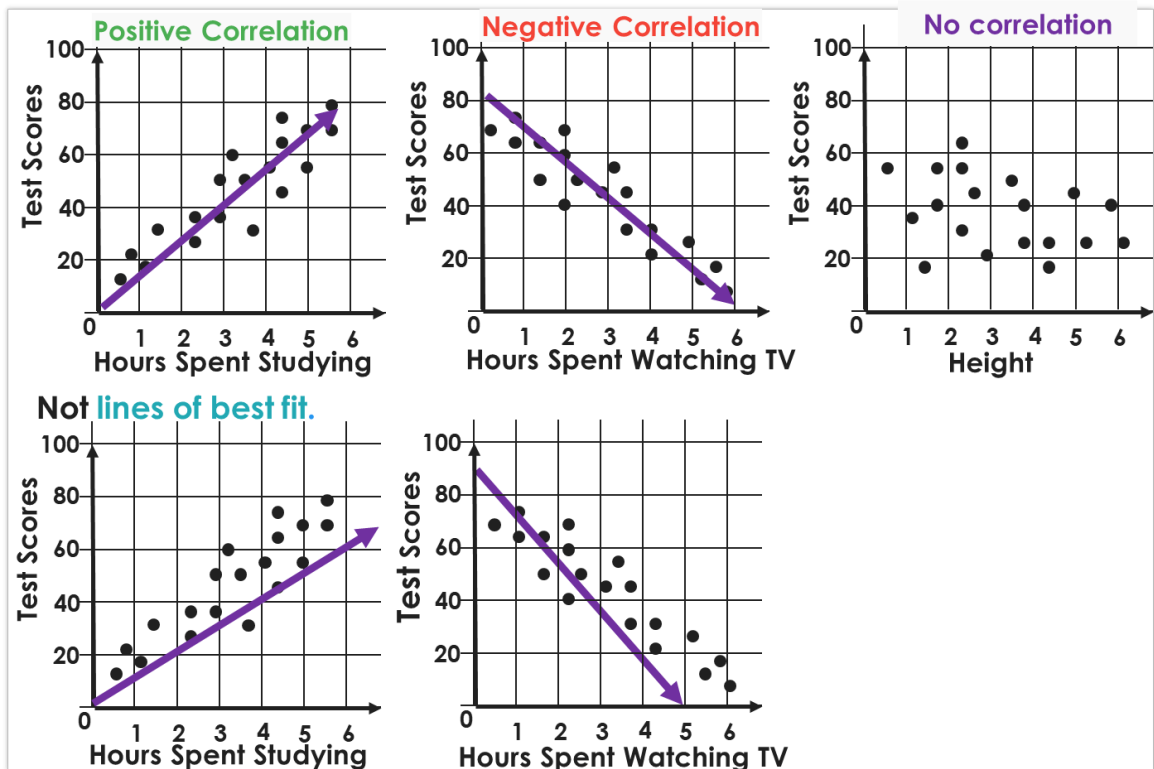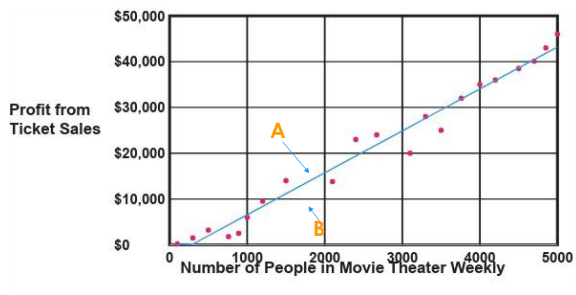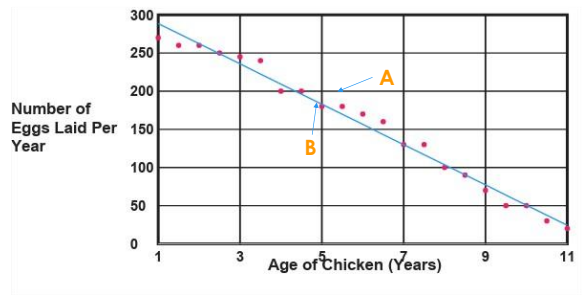A **line of best fit** is a **straight line** drawn through the **center** of collected data in two variables plotted on a scatter plot.

Positive Correlation
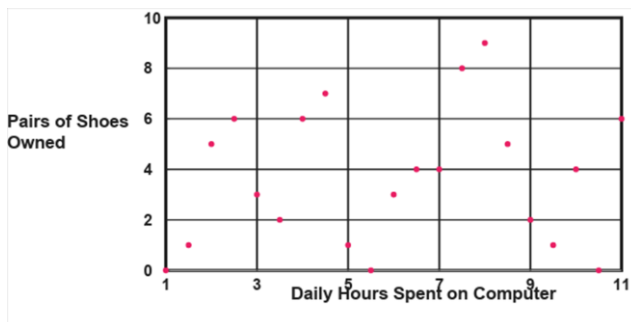
Test Scores vs Hours Spent Studying

Negative Correlation

Test Scores vs Hours Spent Watching TV

No correlation

Test Scores vs Height

Not lines of best fit.

Test Scores vs Hours Spent Studying

Test Scores vs Hours Spent Watching TV

💬 CFU

Which is the line of best fit? Explain.

Profit from Ticket Sales vs Number of People in Movie Theater Weekly — A, B

Which is the line of best fit? Explain.

Number of Eggs Laid Per Year vs Age of Chicken (Years) — A, B

Explain why this data collection does not have a line of best fit.

Pairs of Shoes Owned vs Daily Hours Spent on Computer

1 Examine the scatterplot.
2 Draw a line of best fit.
3 Interpret the correlation between the two sets of data. (write)

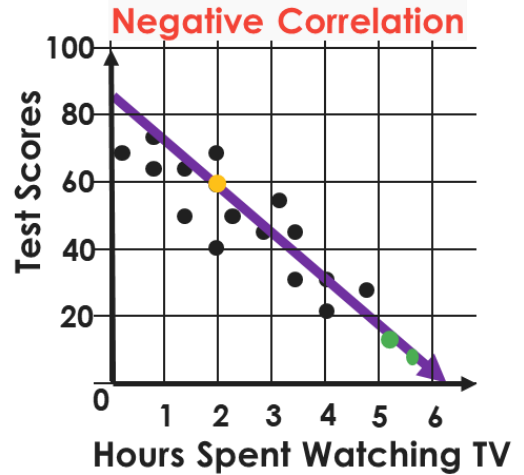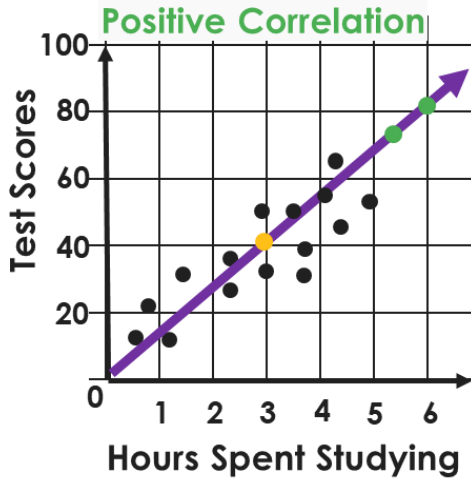**1.** The scatter plot below shows the amount of daily sunshine and the number of shoppers.

Number of Shoppers

Amount of Sunshine

2. The scatter plot below shows the amount of daily rain and the number of shoppers.
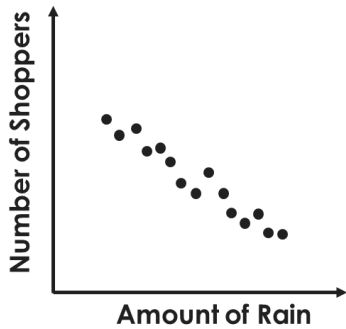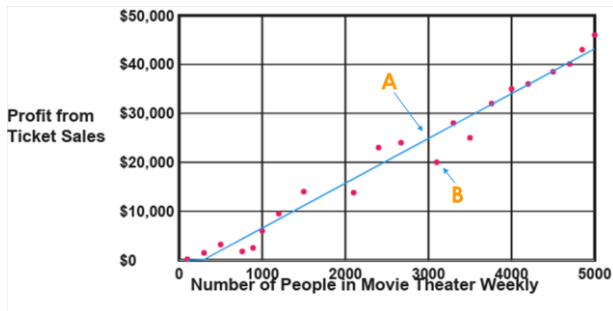
Number of Shoppers

Amount of Rain

A **line of best fit** is a **straight line** drawn through the **center** of collected data in two variables plotted on a scatter plot.
► A **line of best fit** is the **best approximation** of the data set.
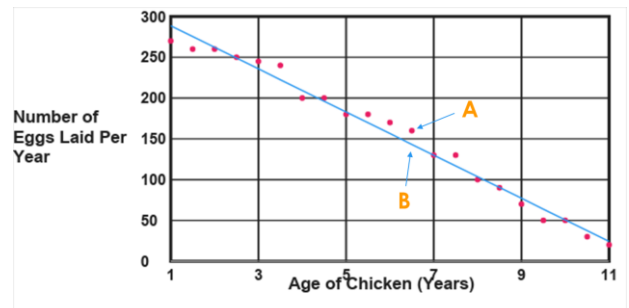► The line of best fit is helpful in predicting values that **are not on the data collected.**

Positive Correlation — Test Scores vs Hours Spent Studying

Negative Correlation — Test Scores vs Hours Spent Watching TV

💬 CFU

If 2500 people go to the movies per week, what is the approximation of the profit? Explain.

Profit from Ticket Sales vs Number of People in Movie Theater Weekly

Which point is the best representation of the data set? Explain.

Number of Eggs Laid Per Year vs Age of Chicken (Years)

Which value can be predicted with the line of best fit? Explain.
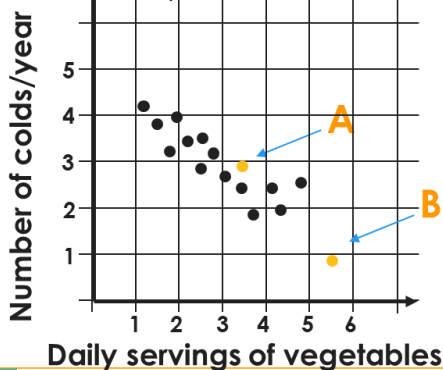
Number of colds/year vs Daily servings of vegetables

1 Read the description.
2 Examine the line of best fit.
3 Select the correct answer.

3. The scatter plot below shows the average vehicle speed and number of traffic tickets issued on a certain highway in 2011.
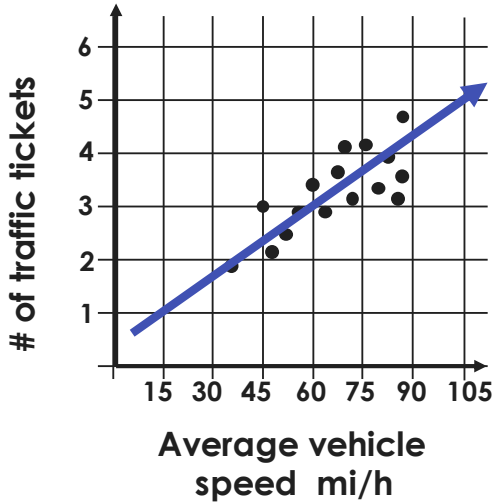
A. According to the line of best fit, a driver that travels at 60 mi/h receives 3 traffic tickets.
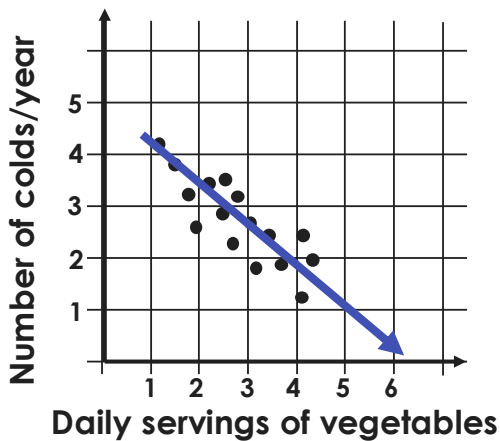**True   False**

B. According to the line of best fit, a driver that travels at 45 mi/h receives 3 traffic tickets.
True   False

C. A value that can be predicted by the line of best fit is that a speed of 15 mi/h will result in 1 ticket.
True   False

4. The scatter plot below shows the daily servings of vegetables eaten and life span of a certain population.

A. According to the line of best fit, 3 ½ servings of vegetables results in 3 colds a year.
True   False

B. According to the line of best fit, 4 servings of vegetables results in 2 colds a year.
 True   False

C. A value that can be predicted by the line of best fit is that 5 servings of vegetables will results on 1 cold per year.   **True   False**
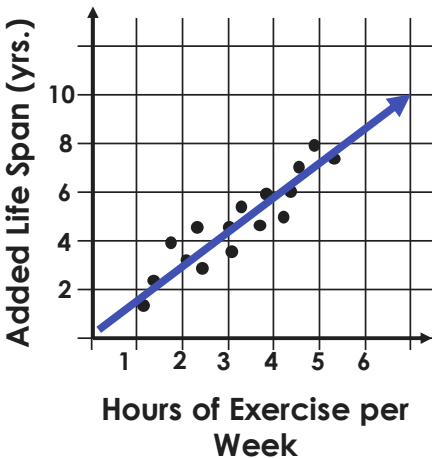
Skill Closure

1	Examine the scatterplot.
2	Draw a line of best fit.
3	Interpret the correlation between the two sets of data. (write)

1. The scatter plot here shows the weekly hours of exercise and life span of a certain population.

Life Span

Hours of Exercise per Week

_____

_____

_____

_____

_____

Concept Closure

Leo answered A as being true, but Manoj says that this is false because there is no collected data for 6 hours. Do you agree with Manoj?

Added Life Span (yrs.)

10
8
6
4
2

1 2 3 4 5 6

Hours of Exercise per Week

A. According to the line of best fit, 6 hours of exercise a week will increase life span 10 years. **True   False**

_____

_____

_____

_____

Summary Closure

What did you learn today about drawing a line of best fit for a scatter plot?

_____

_____

_____

_____

Word Bank
scatter plot
data set
positive correlation
negative correlation
no correlation
best representation
predict value

1 Examine the scatterplot.
2 Draw a line of best fit.
3 Interpret the correlation between the two sets of data. (write)

1. The scatter plot below shows the number of times fast food is eaten in a week and change in weight over time for a certain population.
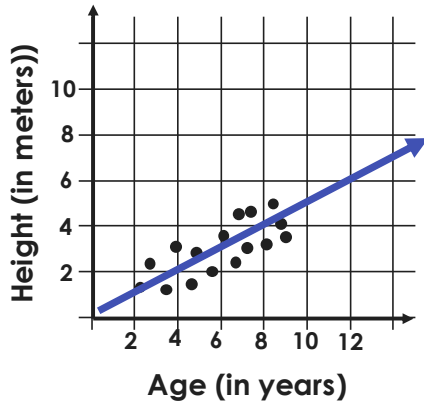

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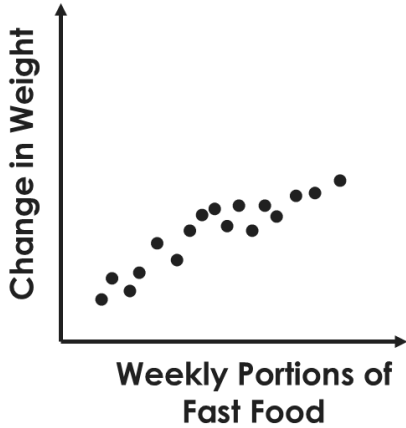
2. The scatter plot below shows the number od days absent per quart and quarter grades.
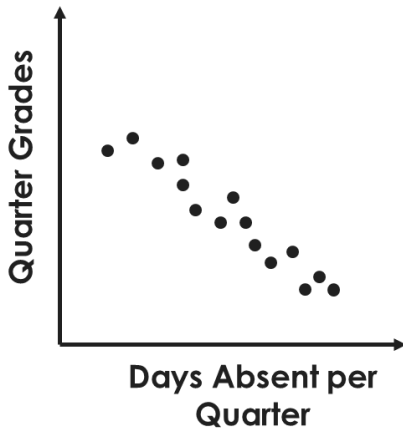

_____

_____

_____

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_____

1 Read the description.
2 Examine the line of best fit.
3 Select the correct answer.

3. The scatter plot below shows the line of best fit for tree ages and heights.

A. According to the line of best fit, a tree that is 4 years old has a height of 2 meters.
True   False

B. According to the line of best fit, a tree that is 4 years old has a height of 3 meters.
True   False

C. A value that can be predicted by the line of best fit is that a tree that is 12 years old reaches a height of 6 meters.   **True   False**
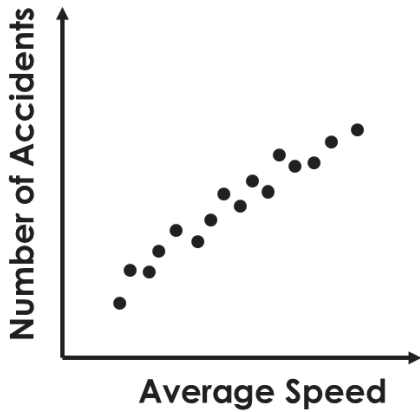
4. The scatter plot below shows the line of best fit for the air pressure of different mountains and their height.
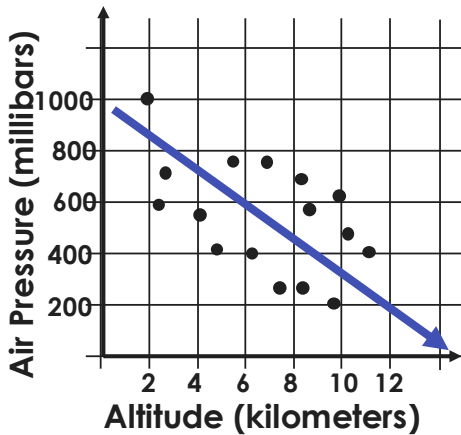
A. According to the line of best fit, an altitude of 6 kilometers has an air pressure o 600 millibars
True   False

B. According to the line of best fit, an altitude of 2 kilometers has an air pressure o 1000 millibars.
True   False

C. A value that can be predicted by the line of best fit is that a 12 kilometers altitude has an air pressure of 200 millibars.   **True   False**
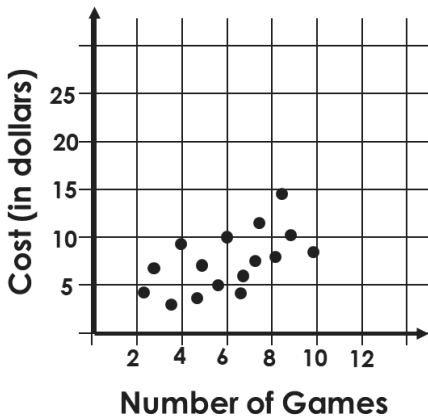
Draw a line of best fit.
Interpret the correlation.

1. The scatter plot below shows the how fast cars are traveling and the number of accidents.

Number of Accidents

Average Speed

_____

_____

_____

_____

_____

Examine the line of best fit or trend line.
Answer True or False. (box)

2. The scatter plot below shows the cost of playing video games and the number of games.

Cost (in dollars)

Number of Games

A. According to the line of best fit, 4 games cost $5.
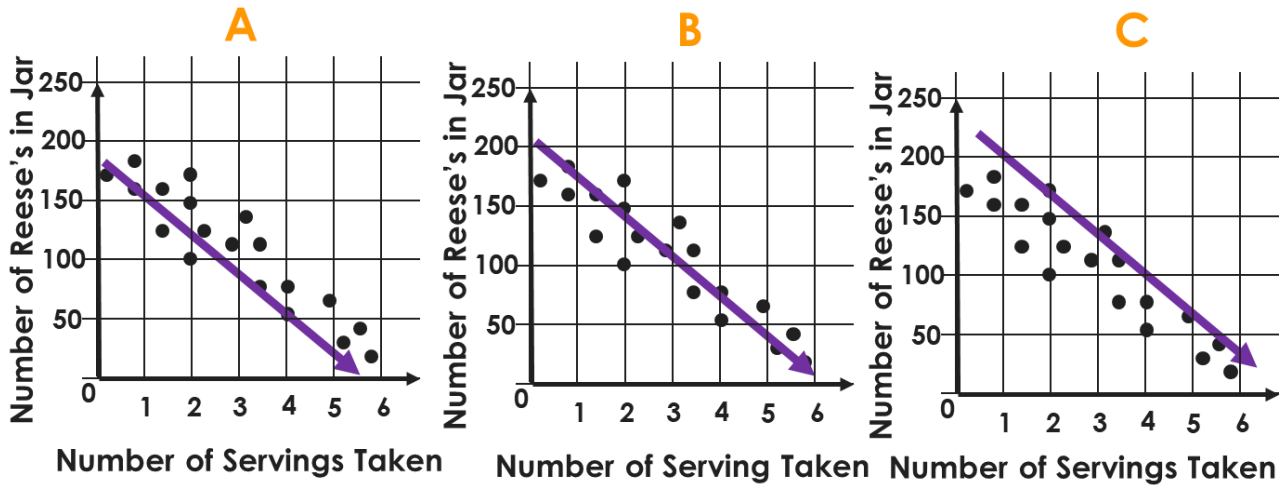
True   False

B. According to the line of best fit, 6 games cost $10.

True   False

C. A value that can be predicted by the line of best fit is that 12 games will cost $15.

True   False

**Example the lines of best fit.
Answer the questions.**
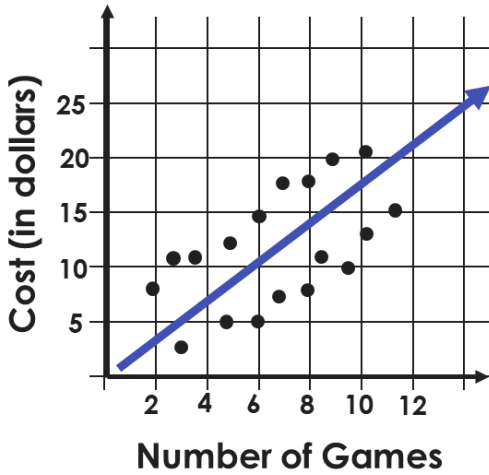

Which is the line of best fit?

_____

_____

_____

How would the data be affected if A is selected as the line of best fit? Hint: Compare both graphs at 4 total servings.

_____

_____

_____

How would the data be affected if C is selected as the line of best fit? Hint: Compare both graphs at 4 total servings.

_____

_____

_____

Examine the line of best fit or trend line.
Answer the question.

Cost (in dollars) vs **Number of Games**
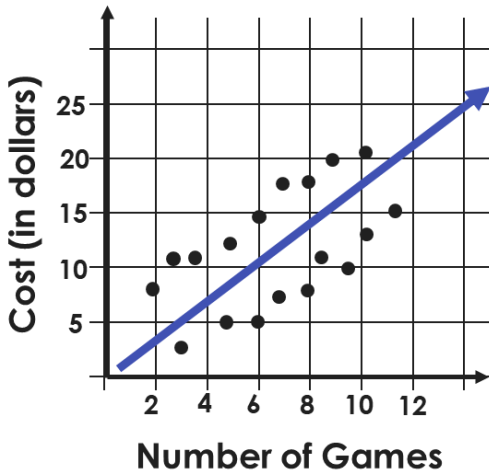
Leo says that the line of best fit is incorrect because it doesn't touch any of the collected data. Explain why Leo is incorrect.

_____

_____

_____

Cost (in dollars) vs **Number of Games**

2A. According to the line of best fit, if you play 6 games, you spend $5.

True   False

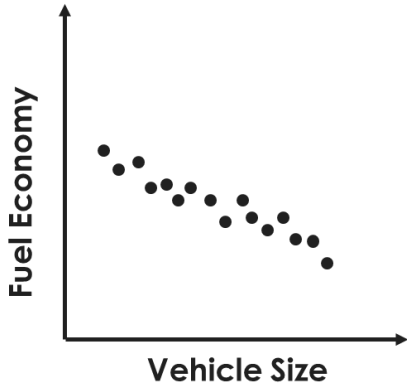**2B**. According to the line of best fit, if you play 6 games, you spend $10.

True   False

2C. A value that can be predicted by trend line is that if you play 14 games, you spend $25.
True   False

Draw a line of best fit.
Answer the questions.

1. The scatter plot below shows the correlation between vehicle size and fuel economy (miles per gallon).
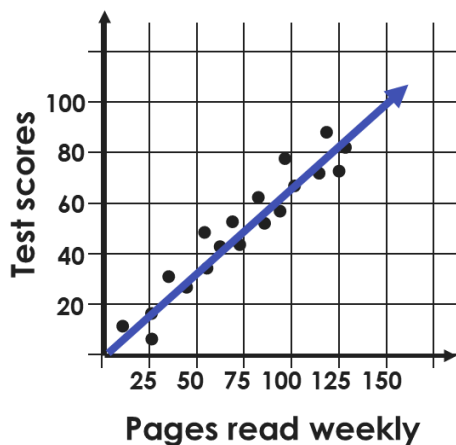
1A. If someone is trying to buy a car that will save money in gasoline, what does this trend line tells them?

Fuel Economy

Vehicle Size

1B. If someone is trying to buy a car that will keep them safe, what does this trend line tells them?

Write

2. Here are the results of a study conducted in order to determine the correlation between number of pages read monthly and reading comprehension test scores.

2A. According to the line of best fit,

Test scores

100
80
60
40
20

25 50 75 100 125 150

Pages read weekly

2B. A value that can be predicted by trend line is that