WARM UP

Given the following tables, find the average difference of your y-values.



ESSENTIAL QUESTION

How can you use a scatter plot to describe the relationship between two data sets?

NEEDED VOCAB:

- Negative Association
- Negative Correlation
- No Association
- Positive Association
- Positive Correlation
- Trend Line

GOAL: "I CAN...

- Use a scatter plot to describe the relationship between two
- data sets."

Nicholas plotted data points to represent the relationship between screen size and cost of television sets. Everything about the televisions is the same, except for screen size.



EXAMPLE 1

What is the relationship between the hours after sunrise, x, and the temperature, y, shown in the scatter plot?



T

What is the relationship between the hours after sunset, x, and the temperature, y, shown



What is the relationship between the hours after sunset, x, and the amount of rain, y, shown in the scatter plot?



When y-values tend to increase as x-values increase, the two data sets have a **positive** association. As \times \uparrow , \Im \uparrow

When y-values tend to increase as x-values increase, the two data sets have a **negative** association. As \times \uparrow , y \checkmark

When there is no general relationship between the x-values and the y-values, the two data sets have a no association. Neither depends on the other

Describe the type of association each scatter plot shows.



EXAMPLE 2

How can the relationship between the hours after sunrise, x, and the temperature, y, be modeled?



The scatter plot suggests a linear relationship. There is a **positive correlation** between the hours after sunrise and the temperature.

When data with a negative association are modeled with a line, there is a **negative** correlation. If the data do not have an association, they cannot be modeled with a linear function.

How can the relationship between the hours after sunset, x, and the temperature, y, be modeled? If the relationship is modeled with a linear function, describe the correlation between the two data sets.





EXAMPLE 3

What trend line models the data in the scatter plot?

(6,200) (74,450) W/2 points we "The function." 31.25 the function. 450-200 = 250 f(x) - 200 = 31.25(x-6) f(x) - 200 = 51.25x - 187.5 f(x) - 200 = 51.25x + 12.5

A **trend line** models the data in a scatter plot by showing the general direction of the data. A trend line fits the data







EXAMPLE 4

The table shows the amount of time required to download a 100-megabyte file for various internet speeds. Assuming the trend continues, how long would it take to download the 100-megabyte file if the internet speed is 75 kilobytes per second?



Solving this graphically

If we plot the points from the table and draw in a line that has equal amounts of points on either side of the line, making sure it goes through at least two solid points, we can then use those points to find our linear function.

 $\frac{6-4}{40-55} = \frac{2}{15} = 2-0.13$ f(x) - 6 = -0.13(x - 40)





What is the x-intercept of the trend line we found from before? y = -.13x + 11.2? Is that possible in the real-world situation of the problem?

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Ø = -.13x+11.2

-11.2 = -.13 x

86.15 = X

7

internet speed for

Ø sec. download.

Makes no sense

6/c it alwaystake

some time to

downland.
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Homework

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