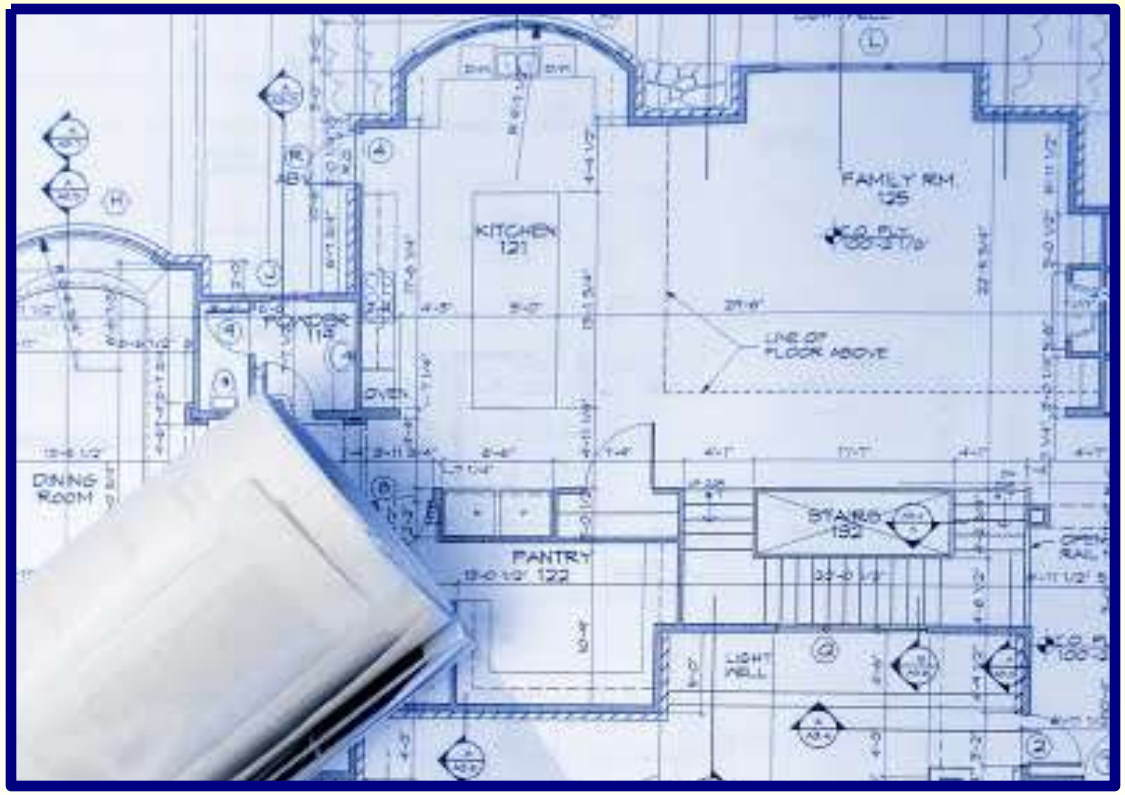
Blueprint Textbooks



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Review Question

How do you use the slope intercept equation to graph $y = -4x - 2$?

Start at (0, -2). Then go down four and over 1.

4-6 Scatter Plots

Day 1

Discussion

Let's say that we collected some data on the number of hours we studied and the grade we received.

When plotted on a graph, would the data points be in a straight line?

What are some things that would cause the data to be erratic?

Objective

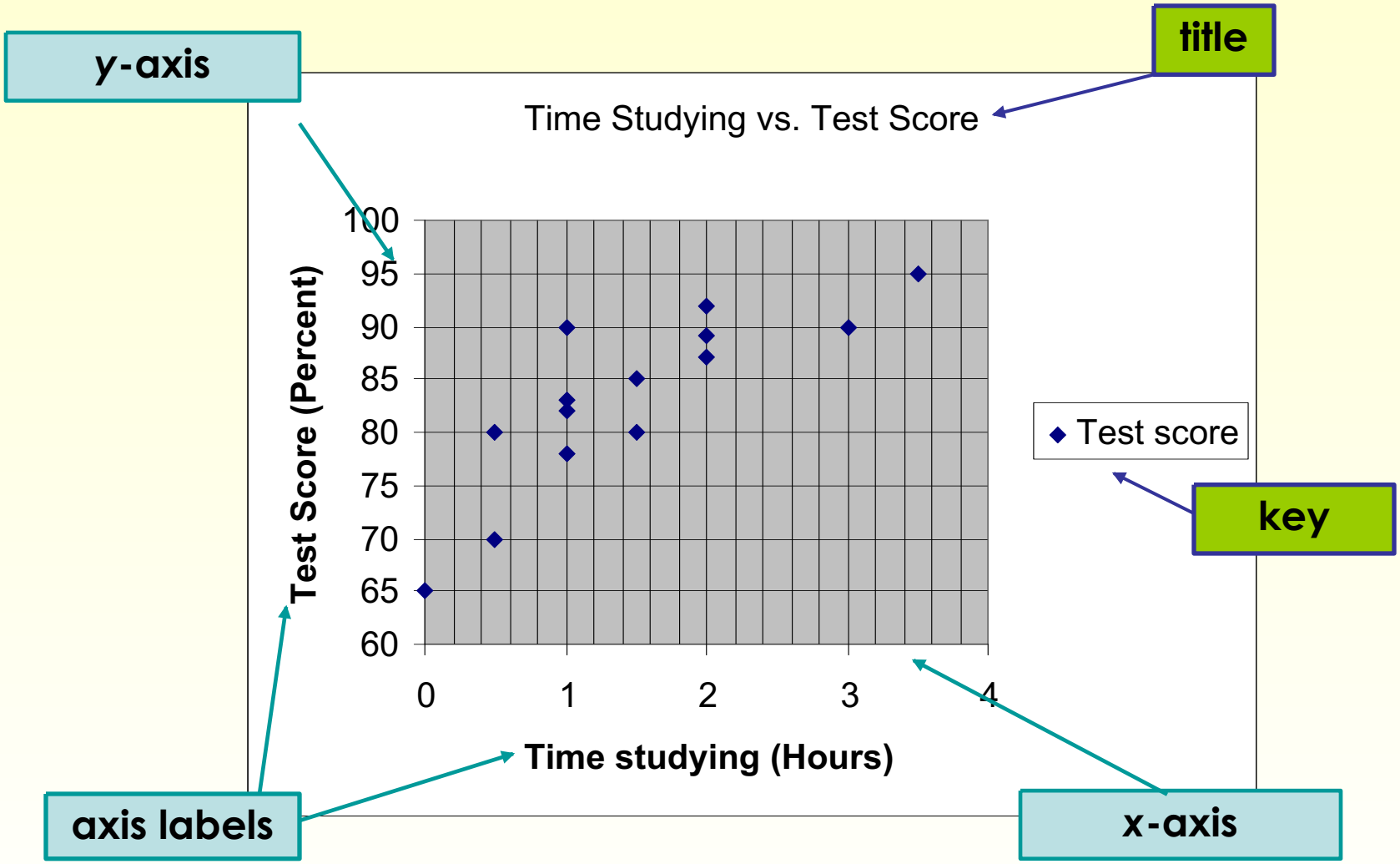
You will be able to read and create scatter plots.

Definition

Scatter plot – graph that shows the relationship of two sets of data

To find how many pieces of data are in a scatter plot, just count the dots!

Example 1

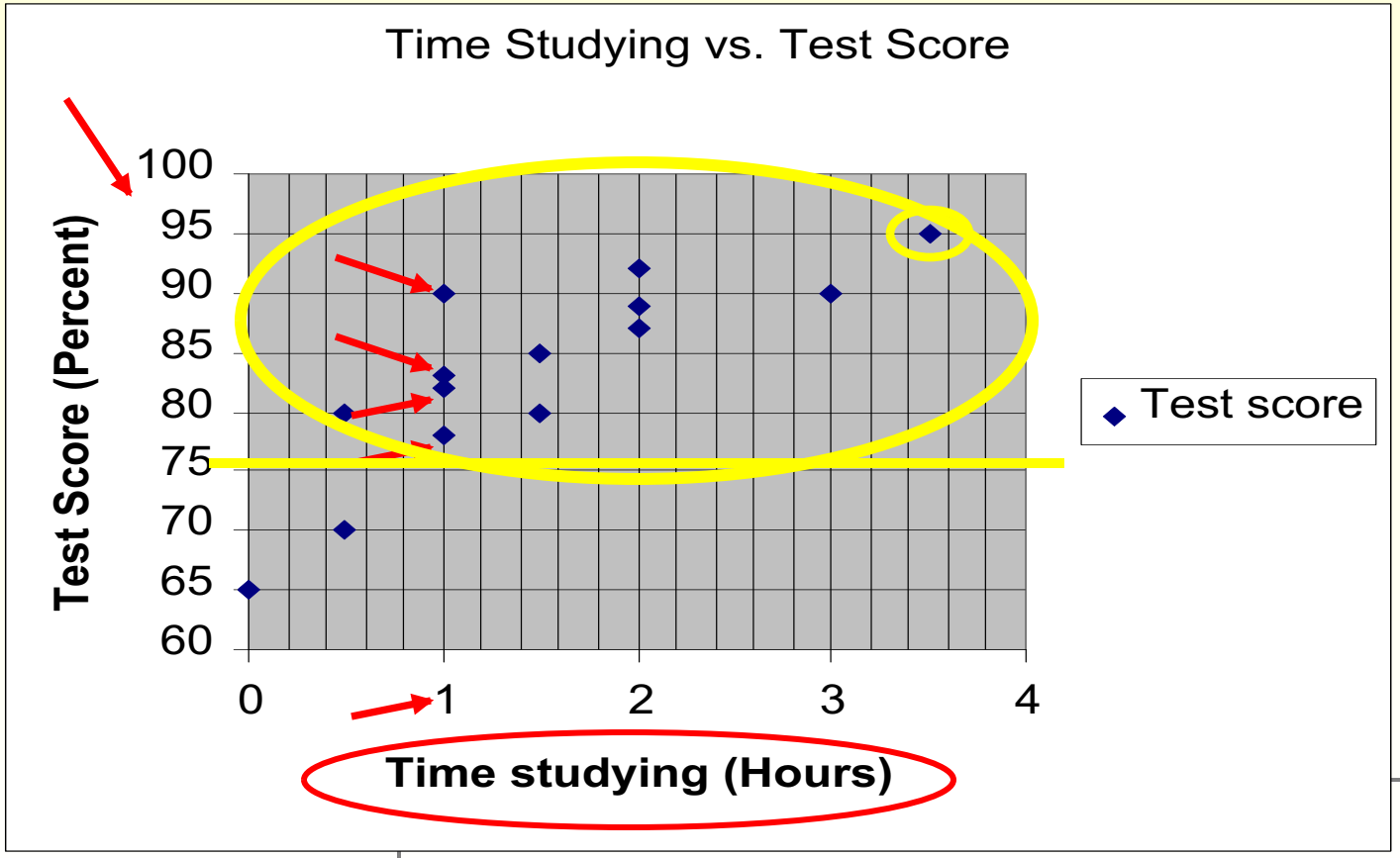

y-axis
title
Time Studying vs. Test Score
100
95
90
85
80
75
70
65
60
Test Score (Percent)
0
1
2
3
4
Time studying (Hours)
Test score
key
axis labels
x-axis

Example 1

What was the highest score in the class? **95%**

How many students studied for one hour? **4**

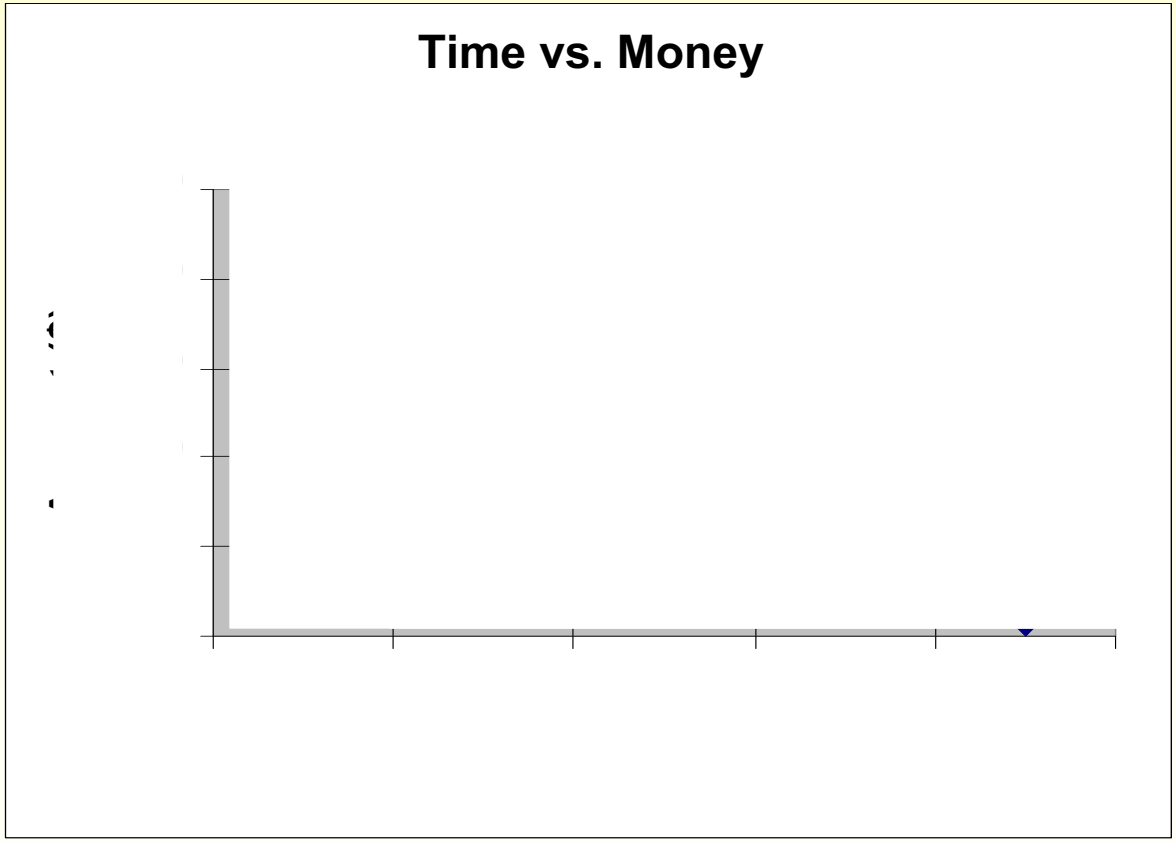
How many students scored ***above*** 75%? **12**



Example 2

Time spent at the mall and amount of money left

TIME	MONEY
1	200
3	155
4	145
7	85
8	80
9	5



Things to Remember:

1. Choose good starting and ending points for each axis

2. Choose sensible scales

3. Time always goes on the x - axis

You Try!

1. Create a scatter plot based on the following sets of data.

TIME	MONEY EARNED
1	8
2	15
4	35
5	45
6	50
9	85

You Try!

2. Create a scatter plot based on the following sets of data.

Age of Car	Value of Car
1	$15,000
2	$12,500
3	$10,000
6	$7500
10	$5000
15	$375

Discussion

How does this relate to our study of lines?

Notice the data sets are sort of in a line pattern. Tomorrow we will try to summarize these data sets by drawing a line that best fits data sets.

What did we learn today?

To read and create scatter plots

Review Question

Why couldn't you use a pie graph or bar graph for the two homework problems?

Two sets of data

When should we use a scatter plot?

When we are graphing two sets of data

4-6 Scatter Plots

Day 2

Discussion

What is the difference between the two scatter plots in each of your two homework problems?

Direction

What is causing this to happen?

Data; slope

Objectives

You will identify positive/negative relationships.

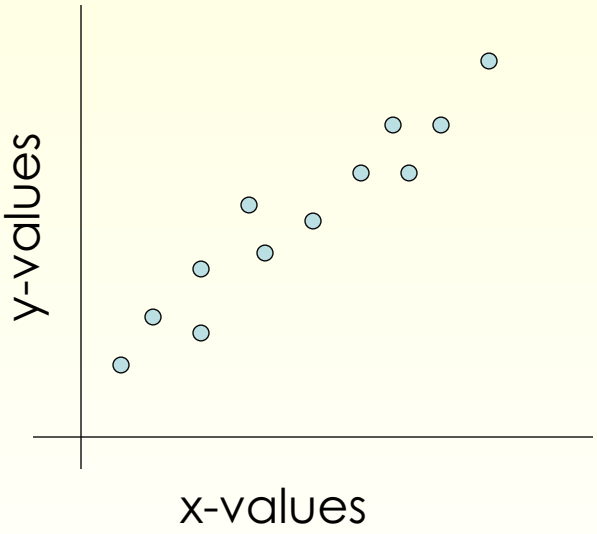
You will draw a best fit line.

Definitions

Positive Relationship/Slope

Up/Right

X **increases**, Y **increases**



What would happen if x and y were decreasing?

Example: Driving Time and Distance

Can someone give me another example of a positive relationship?

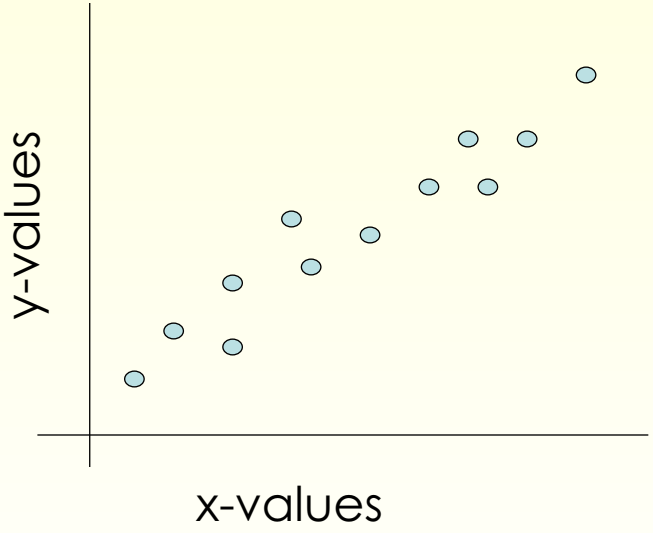
Definitions

Negative Relationship/Slope

Down/Right

X **increases**, Y **decreases**

Or vice versa



Example: Time and Amount of Gas Left

Can someone give me another example of a negative relationship?

What type of relationship exists in hw examples 1 and 2?

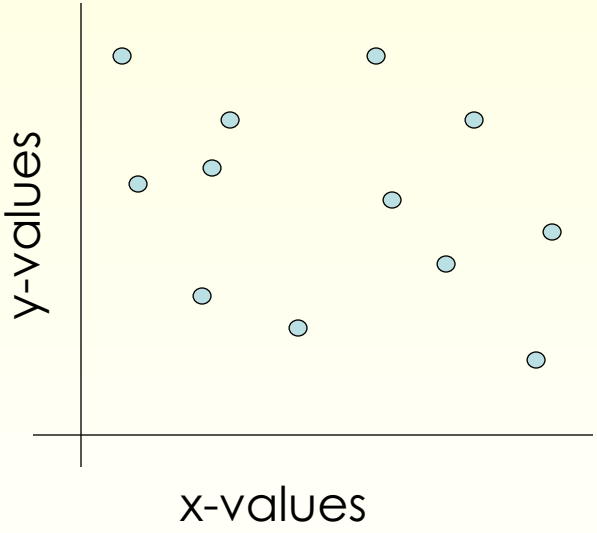
Definitions

No Relationship

Scattered

Example: hair color, grades

Can someone give me another example of no relationship?



You Try!

Determine whether a scatter plot of the data for the following might show a positive, negative, or no relationship.

1. Time spent in the gym and your strength.

2. The amount of songs on your iPod and the amount of space left.

3. Total text messages and your bill.

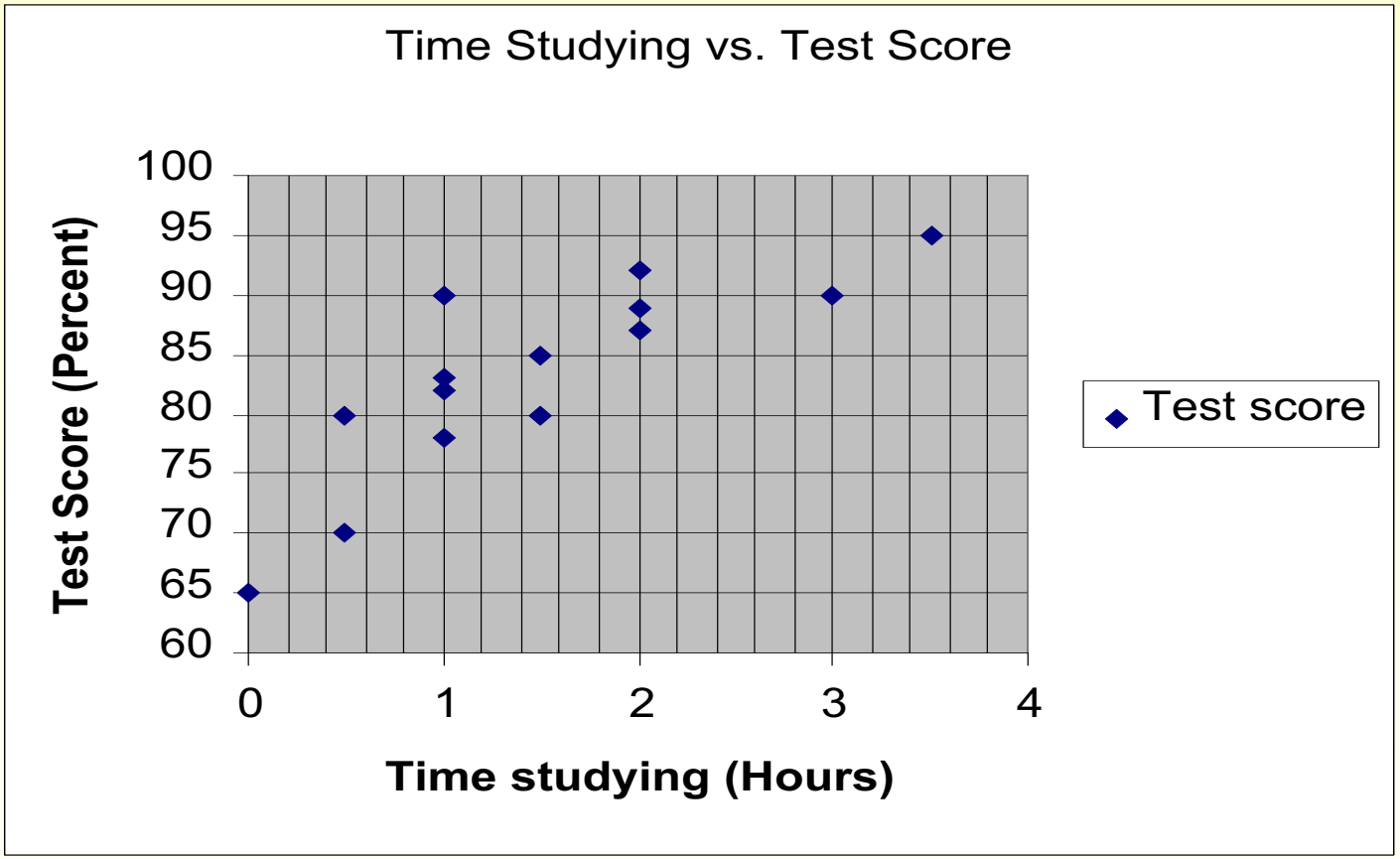
Definitions

Best fit line – line that summarizes the data set

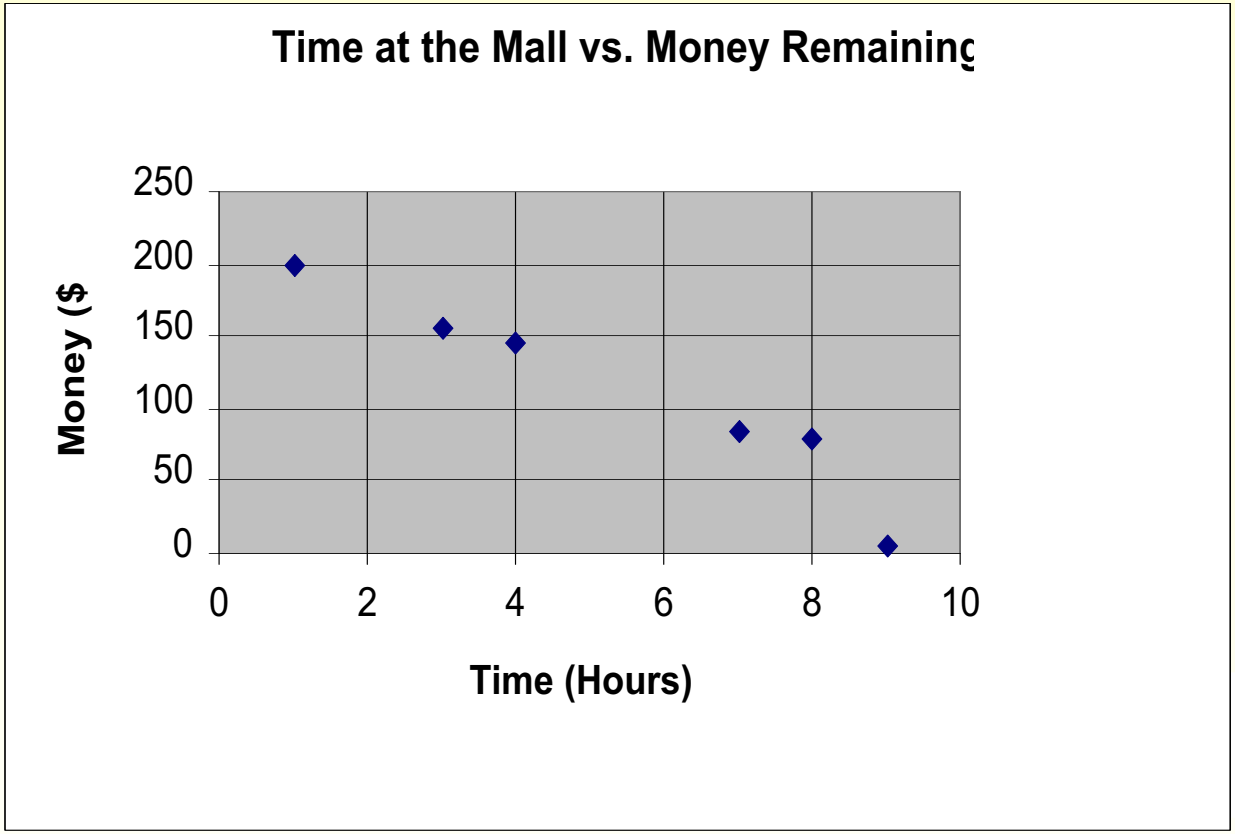
Things to remember:

1. Follow the basic direction of the data
2. Same amount of points above and below the line
3. Draw line through as many points as possible

Ex 1: Draw a Best Fit Line



Ex 2: Draw a Best Fit Line



You Try!

Draw a best fit line for each of your two homework problems.

What did we learn today?

To identify positive/negative relationships

To draw a best fit line

Review Question

Explain how to draw a best fit line.

1. Follow the basic direction of the data
2. Same amount of points above and below the line
3. Draw line through as many points as possible

4-6 Scatter Plots

Day 3

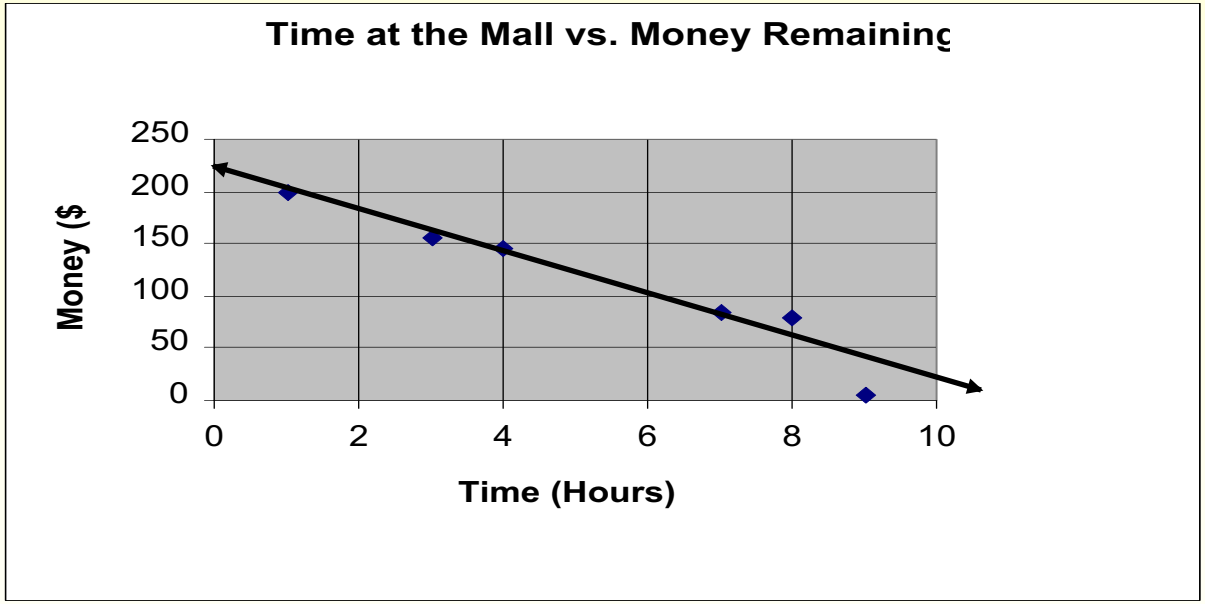
Discussion

What two things do you need to write an equation of a line?

Slope, y-intercept

Discussion

What would the equation of this best fit line be?



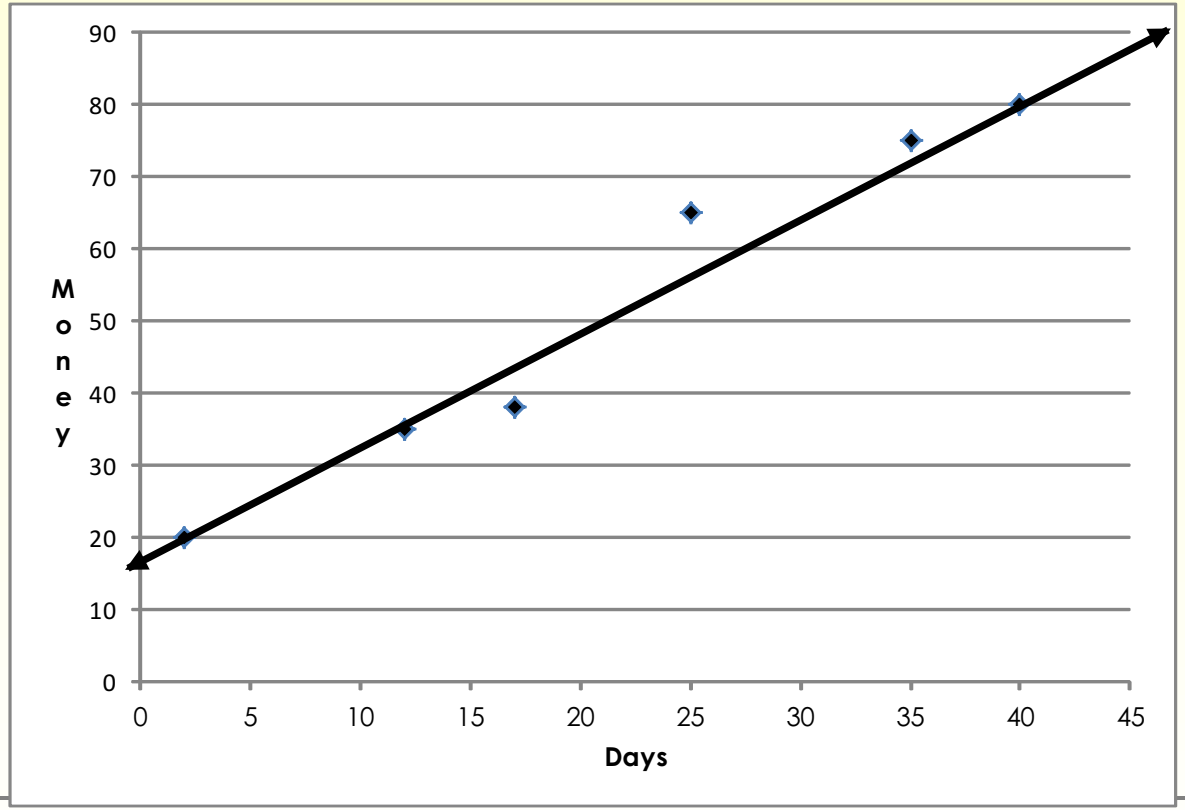
Objectives

You will be able to write the equation of the best fit line.

Example 1

DAYS	Money Saved
2	20
12	35
17	38
25	65
35	75
40	80

Draw a scatter plot and best fit line.
Write the equation of the line.



You Try!

Write the equation of the best fit line for problems 3 and 4 from last night's homework.

What did we learn today?

To write the equation of the best fit line

Review Question

How do you write the equation of the best fit line?

$y = mx + b$

Find the y-intercept (b). Then locate two points on the line. Then find the slope (m) between the two points.

4-6 Scatter Plots

Day 4

Discussion

Scatter plots and best fit lines are used in engineering. When engineers are designing roadways they must calculate how many lanes of traffic and traffic lights are needed. In order to do, this they collect data.

They collect data on how many cars are added to the roads for different size housing plans. This data is then graphed on a scatter plot.

Discussion

Once the data is graphed, a best fit line and equation are developed. The engineers use this equation the next time someone wants to put in a housing plan. They enter the amount of new homes into the best fit equation and get a value for how many new cars the development will add to the current roadways.

The engineers use this information to figure out how many new lanes and lights will be needed.

Objectives

You will make up a data set that represents a positive relationship.

You will make up a data set that represents a negative relationship.

Activity

If you truly understand something, then you can talk freely about it. Specifically, you should be able to come up with your own explanations about the topic. This is what we will be doing today.

Activity

1. Make up a data set (10 points) that has a positive relationship. Then do the following:

a. Write a sentence describing your data set.

b. List your data set in a table.

c. Make a scatter plot.

d. Draw a best fit line.

e. Find the equation of the best fit line.

2. Make up a data set that has a negative relationship. Then do a-e from above.

What did we learn today?

To make up a data set that represents a positive relationship

To make up a data set that represents a negative relationship