

Scatter plots

- 1) Students graph scatter plots
- 2) Students predict correlation of linear regression through word problems, graphs, and calculator

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September 2010

Lesson objectives

Teachers' notes

Subject: Math

Topic: Algebra 1

Grade(s): 9

Prior knowledge: How to graph coordinates

Cross-curricular link(s): Economics

Lesson notes:

This lesson activity focuses on students' knowledge of how to graph scatter plots and predict correlations

Page 5 - Objects are linked to word correlation problems. Touch object and predict correlation. Move the box to check to see if correct. Touch the same link as before to get back to page 5.

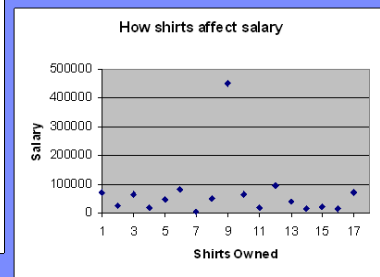
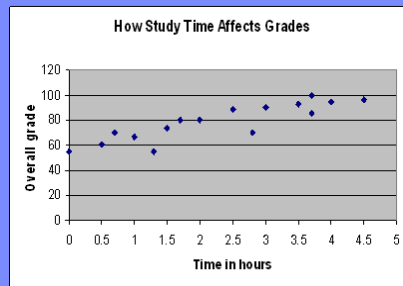
Test yourself link gives a short quiz on correlations. Touch under question and answer will fade in. Advance page and finish presentation.

(Note: Scatter plots w/ calculator is an available notebook file to show correlation on calculator)

Lesson objectives

Teachers' notes

1-5 Scatter Plots

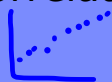


- Scatter plots are similar to line graphs in that each graph uses the horizontal (x) axis and vertical (y) axis to plot data points.
- Scatter plots are most often used to show correlations or relationships among data.

1-5 Scatter Plots

Vocabulary Words:

- scatter plot- *shows relationships between two sets of data*
- correlation - *the relationship between two variables*
- line of best fit - *is a line that best represents the data on (trend line) a scatter plot*
- positive correlation- *the data displayed on the graph resembles a line rising from left to right*
- negative correlation - *the data displayed on the graph resembles a line falling from left to right*
- no correlation- *the data displayed on the graph neither resembles a line rising nor falling from left to right*



1-5 Scatter Plots

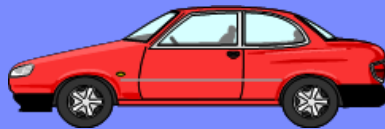
A Correlation can be Predicted without Having to Observe the Data in a Table or Graph.

Given the examples, what is the correlation?
(positive, negative, or no correlation)

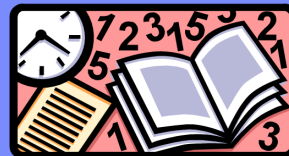
Pick a Picture



Test Yourself



1-5 Scatter Plots



- Your grade point average and the number of A's you receive.

Positive

Negative

None

- Time spent studying and the grade on your test.

Positive

Negative

None

1-5 Scatter Plots

- The size of a person and the number of fingers he has

Positive

Negative

None



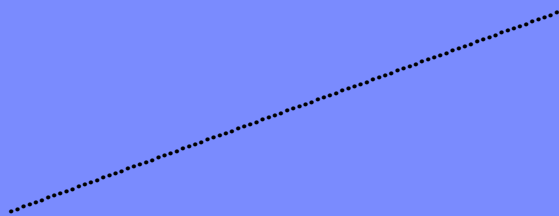
1-5 Scatter Plots

- The weight and height of each member of a soccer team.

Positive

Negative

None



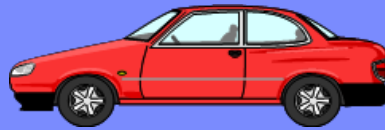
1-5 Scatter Plots

- The size of a car or truck and the number of miles per gallon of gasoline it can travel.

Positive

Negative

None



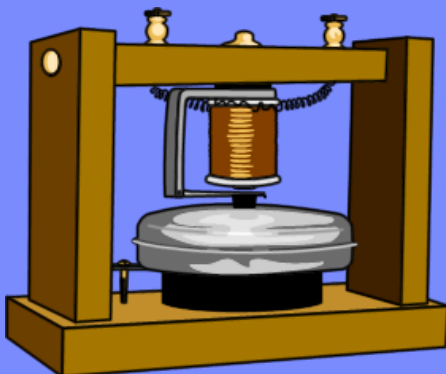
1-5 Scatter Plots

- The number of telephones using the same cell phone number and the number of calls you receive.

Positive

Negative

None



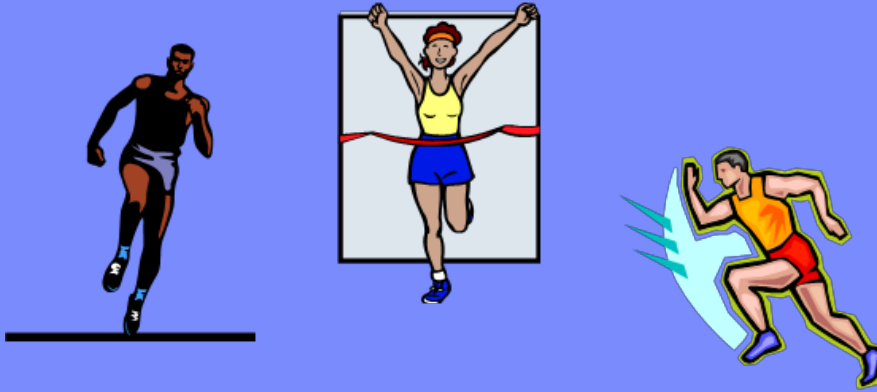
1-5 Scatter Plots

- The speed of a runner and the number of races he/she wins.

Positive

Negative

None



1-5 Scatter Plots

Test Yourself....write these down & answer

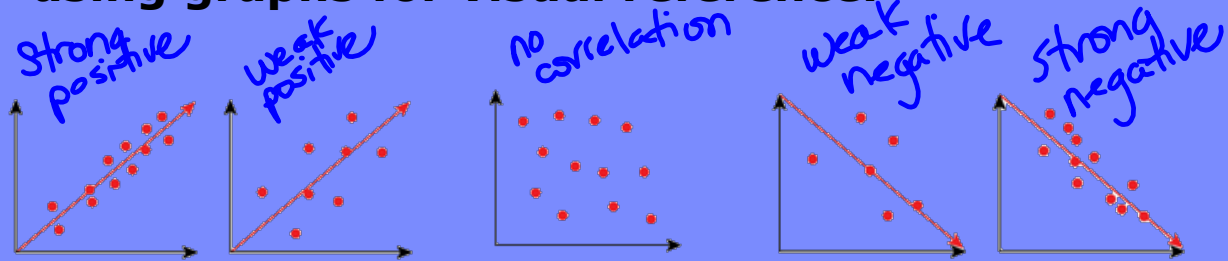
Do the data sets have a positive, negative, or no correlation?

- The minimum wage and the year
- The amount of precipitation and the day of the week
- The amount of germs on your hands and the number of times you wash your hands in a day



1-5 Scatter Plots

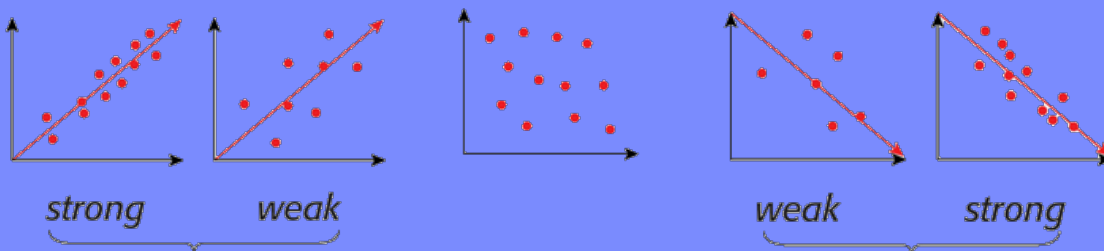
Correlation can also be shown in scatter plot using graphs for visual reference.



A trend line can be shown which is the line of best fit through the data points.

1-5 Scatter Plots

Correlation - as one data set changes, the other changes.



Positive correlation; both data sets increase together.

No correlation; as one data set increases, the other decreases.

Negative correlation; as one data set increases, the other decreases.

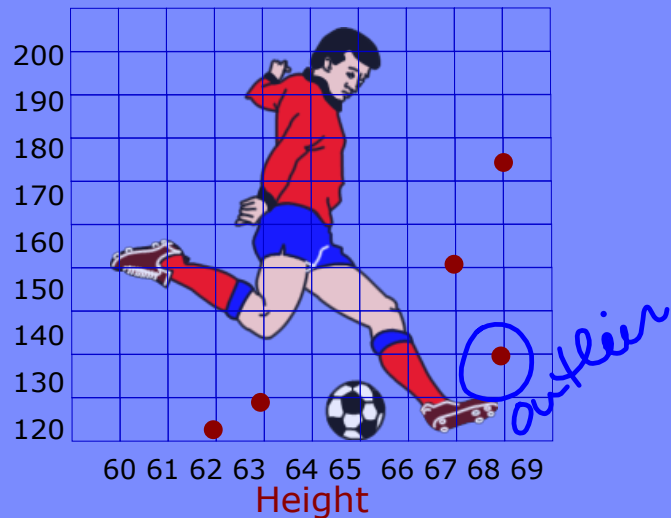
1-5 Scatter Plots

Use the given data to make a scatter plot of the weight and height of each member of a soccer team.

Height (in)	Weight (lbs)
63	125
67	156
69	175
68	135
62	120

Weight

The points on the scatter plot are (63, 125), (67, 156), (69, 175), (68, 135), and (62, 120).



1-5 Scatter Plots

Correlation can also be shown in a calculator as a linear regression.

EDIT CALC TESTS 1:1-Var Stats 2:2-Var Stats 3:Med-Med 4:LinReg(ax+b) 5:QuadReg 6:CubicReg 7:QuartReg	LinReg $y = ax + b$ $a = .25$ $b = 7.75$ $r^2 = 1$ $r = 1$
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Looking at the "r" value, you can determine how close a correlation of the scatter plot.

- r is the correlation coefficient
- r^2 is the coefficient of determination

1-5 Scatter Plots

Correlation Coefficient - Relationship Between X & Y

"r" Value Interpretation

$r = + 1.0$	Strong - Positive	As X goes up, Y always also goes up
$r = + 0.5$	Weak - Positive	As X goes up, Y tends to usually also go up
$r = 0$	- No Correlation -	X and Y are not correlated
$r = - 0.5$	Weak - Negative	As X goes up, Y tends to usually go down
$r = - 1.0$	Strong - Negative	As X goes up, Y always goes down

