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Scatter Plots

Unit 8 Lesson 5

Students will be able to:

Understand the meanings of

Scatter plots

Key Vocabulary:

- Scatter plots
- Correlation
- Line of best fit

SCATTER PLOTS

Scatter plots

A **Scatter Plot** has points that show the relationship between two sets of data. In other words, a scatter plot is a graph that relates two groups of data.

Scatter plots are used to plot data points on a horizontal axis (x-axis) and a vertical axis (y-axis) in the effort to explain to what extent one variable is affected by another variable. The relationship between two variables is called their **Correlation**.

CORRELATION

Positive Correlation - When an increase in value of one variable increases the value of other variable.

Negative Correlation - When an increase in value of one variable decreases the value of other variable.
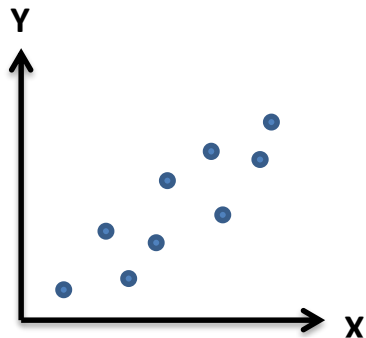
No Correlation - When there is no linear dependency between the variables.

Perfect Correlation - When variables are functionally dependent. In this case all the points are in a straight line.
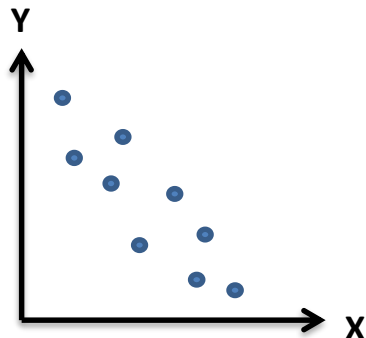
Strong Correlation - When points are located closer to one another on the line.

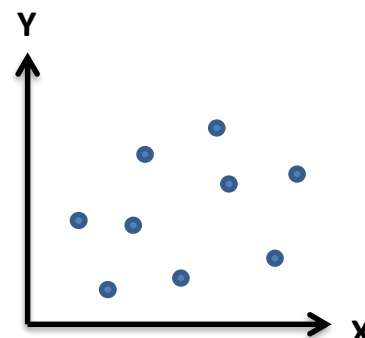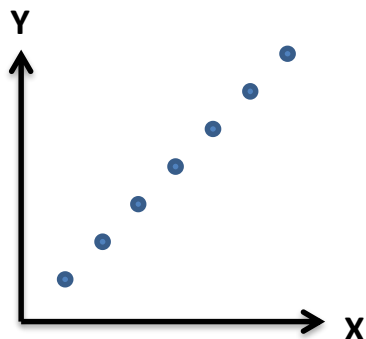**Weak Correlation** - When points are located farther apart to one another on the line.
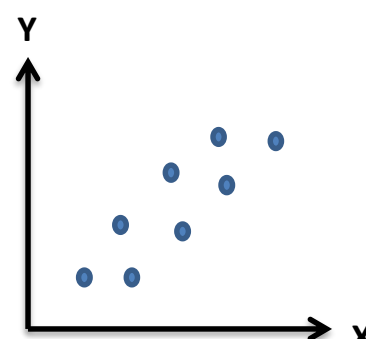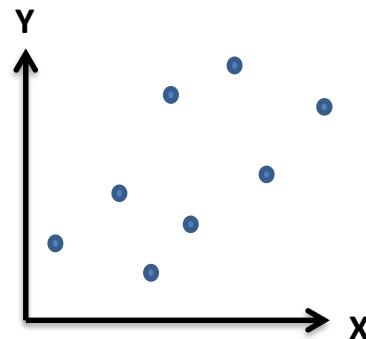
CORRELATION

Positive Correlation

Negative Correlation

No Correlation

Perfect Correlation

Strong Correlation

Weak Correlation

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Line of best fit

A line of best fit is a straight line that represents the data on a scatter plot in best way. This line may pass through all of the points, some of the points or none of the points. Line of best fit is also known as **Trend line**.

How to draw a line of best fit

- Plot all the data on coordinate axis.

- Draw a dotted line that divides the data in two sets (even numbers of points on either side of the line).
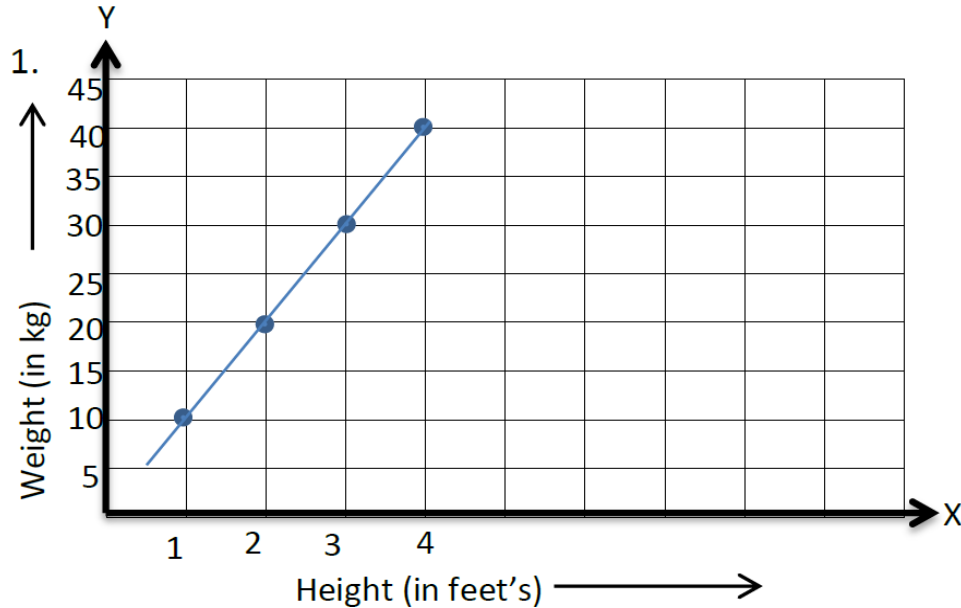
EXERCISE

Height (feet's)	1	2	3	4
Weight (kg)	10	20	30	40

1. Use the data to make a scatter plot. Title, Label and scale it.
2. Is there positive, negative or no correlation.
3. Is the data linear? If it is draw a line of best fit and determines its equation.
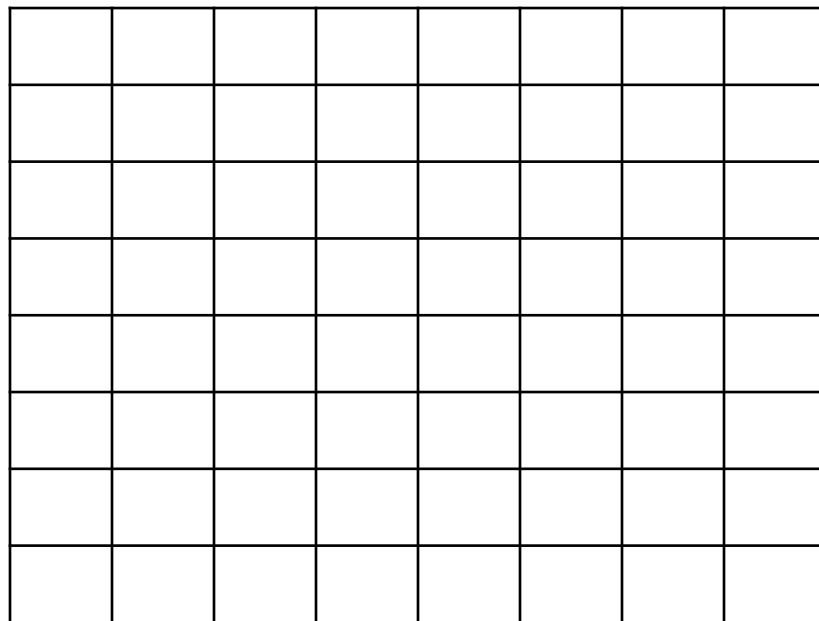
ANSWERS

Height (feet's)	1	2	3	4
Weight (kg)	10	20	30	40

1.

ANSWERS

2. It is a **Positive Correlation**

3. **Yes, Data is linear**.

Linear equation of line y = mx + c

$m = \dfrac{change\ in\ y}{change\ in\ x}$

$m = \dfrac{20-10}{2-1} = \dfrac{10}{1} = 10$

y = mx + c

10 = (10)(1) + c

c = 0

y = mx + c

y = 10x + 0

y = 10x