

**UNIT 4: RELATIONS & LINEAR MODELS**

**LESSON 1: SCATTER PLOTS & CORRELATION**

**1) SCATTER PLOTS**

A scatter plot is a graph that shows the relationship between two sets of numeric data. The points in a scatter plot often show a general pattern, or **trend**.

**To create a scatter plot:**

- collect the data and organize it in a table or as ordered pairs
- present the data points on a graph with labelled axes

**Use the scatter plot to:**

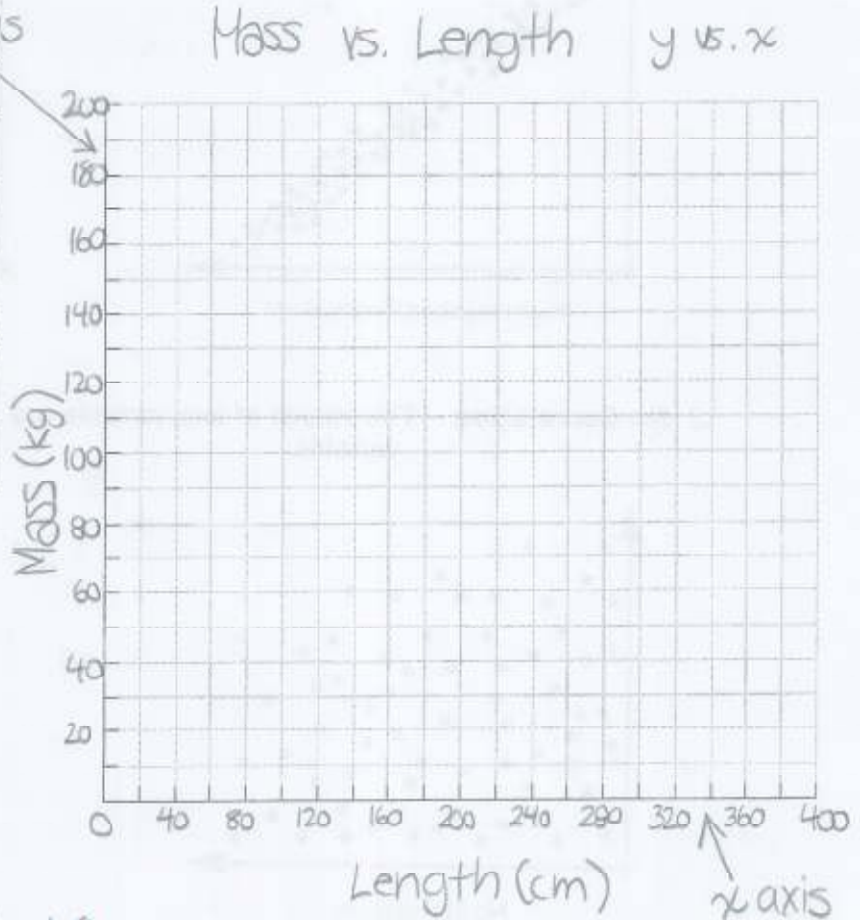
- analyze the data by looking for a pattern
- describe the pattern if one exists

Example: Draw a scatter plot of the following data.

as length increases so does mass.

The table shows the lengths from the nose to the end of the tail and the masses of different cats.

Type of Cat	Length (cm)	Mass (kg)
Lion	300	180
Lioness	270	140
Cheetah	180	45
Mountain Lion	240	90
Jaguar	260	140
Leopard	265	70
Tiger	270	190
Tigress	240	135
Lynx	90	30



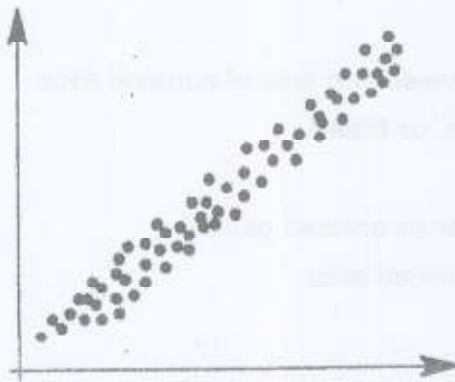
$x$  ← independent variable  
 $y$  ← dependent variable

dependent variable depends on the independent variable

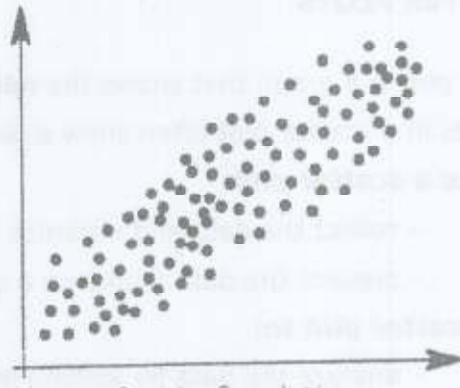
scale 1 "step" = 20

**2) CORRELATION**

- a) **Positive Correlation** – As the values of one variable get bigger, so do the values of the other variable.

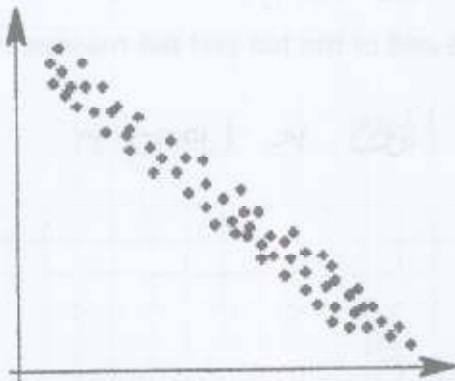


High Positive Correlation

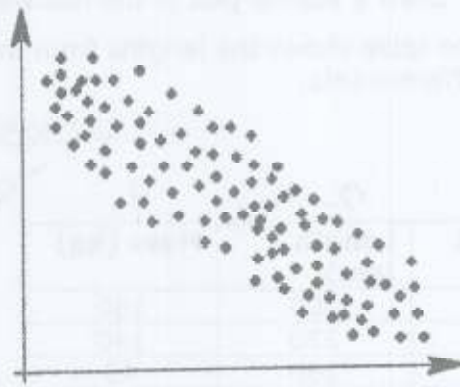


Positive Correlation

- b) **Negative Correlation** – As the values of one variable get bigger, the values of the other get smaller.

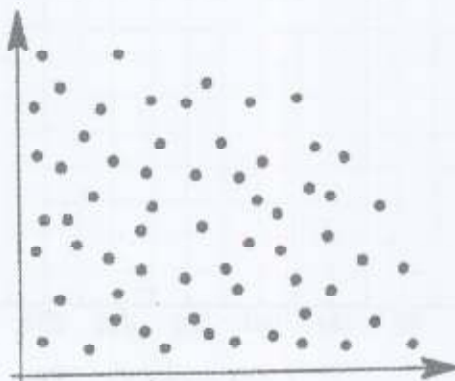


High Negative Correlation



Negative Correlation

- c) **No Correlation** – The values of one variable are unaffected by the values of the other variable.



No Correlation