RELATION

A DEFINITIONS

> **Definition Relation**
>
> A **relation** is a way to show a relationship between two variables (quantities).

In mathematics, we often use the letters x and y to represent the variables. But in other fields, we often represent a variable with the first letter of its name. For example, the variable time is represented by the letter t.

Ex: We study the height of a child at different ages.
State the two variables.

Answer:

- Time in years: This is the variable t. It changes every year.

- Height of the child in cm: This is the variable h. It tells us how tall the child is.

B TABLES

> **Definition Table**
>
> A **table** is used to organize data, making it easier to display and analyze relationships between variables. Typically, each row or column in the table represents a different variable.

Ex: Hugo's height as a function of age is given by the following table:

t (years)	0	1	2	3	4	5	6
h (cm)	52	67	78	86	98	106	114

What is Hugo's height at 4 years old?

Answer: The height of Hugo at 4 years old is 98 centimeters.

C GRAPHS

> **Definition Graph**
>
> A **graph** of a relation is the set of points (x, y) in a plane.

> **Definition Line Graph**
>
> A **line graph** of a relation is the set of points (x, y) connected by straight line segments.

> **Method Plotting a line graph from a table**
>
> In a plane:
>
> - we plot each point (x, y) from the table,
>
> - we connect the points with straight line segments.

Ex: Plot the line graph of Hugo's height as a function of age, using the data below:

t (years)	0	1	2	3	4	5	6
h (cm)	52	67	78	86	98	106	114

Answer:

- First, plot the points $(0, 52)$, $(1, 67)$, $(2, 78)$, $(3, 86)$, $(4, 98)$, $(5, 106)$, $(6, 114)$ on a graph.

- Then, connect the points in order with straight line segments to form the line graph.

2