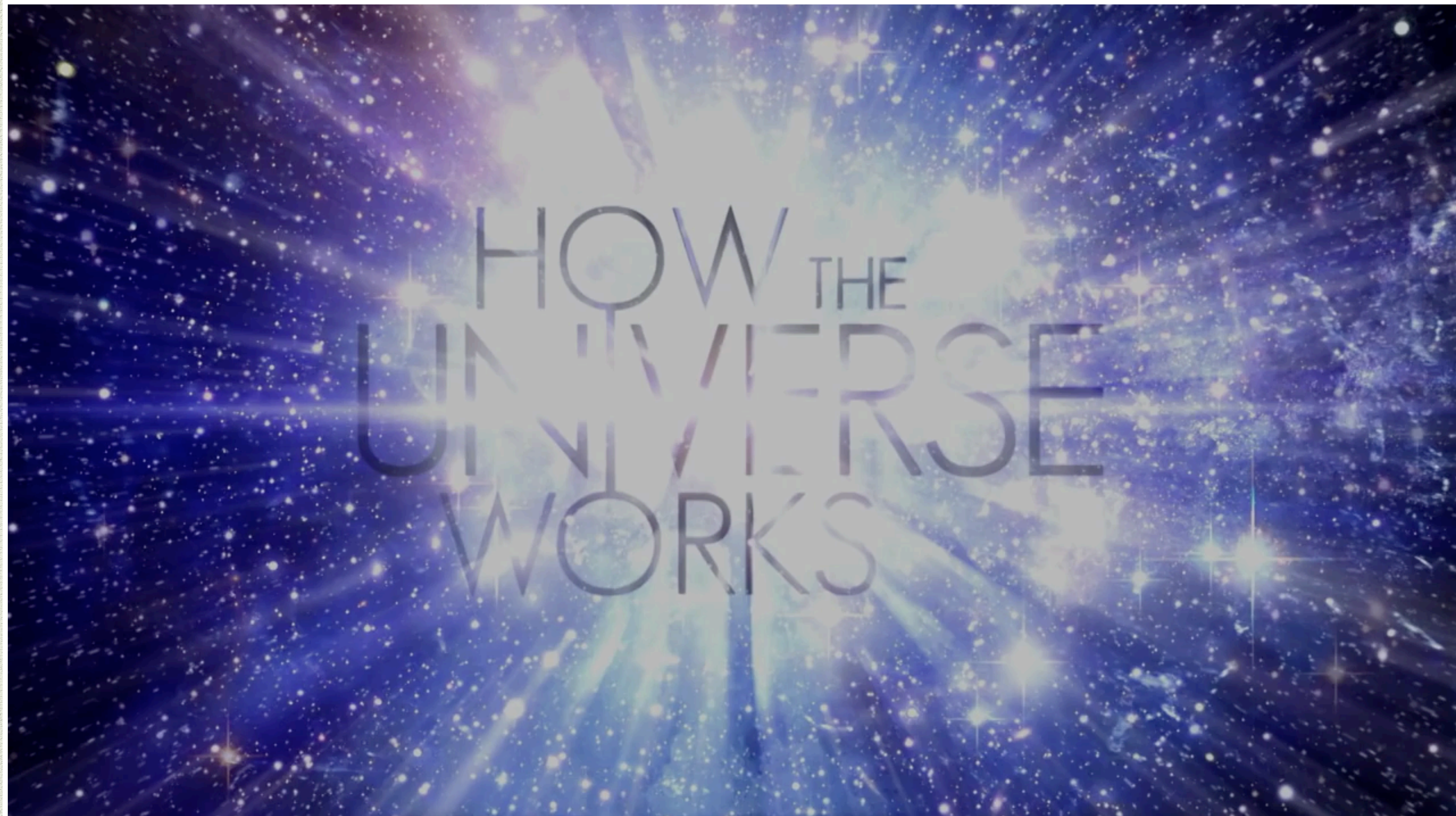


Graphing Analysis

How do graphs help us interpret data?



Phenomenon: Graphing Analysis

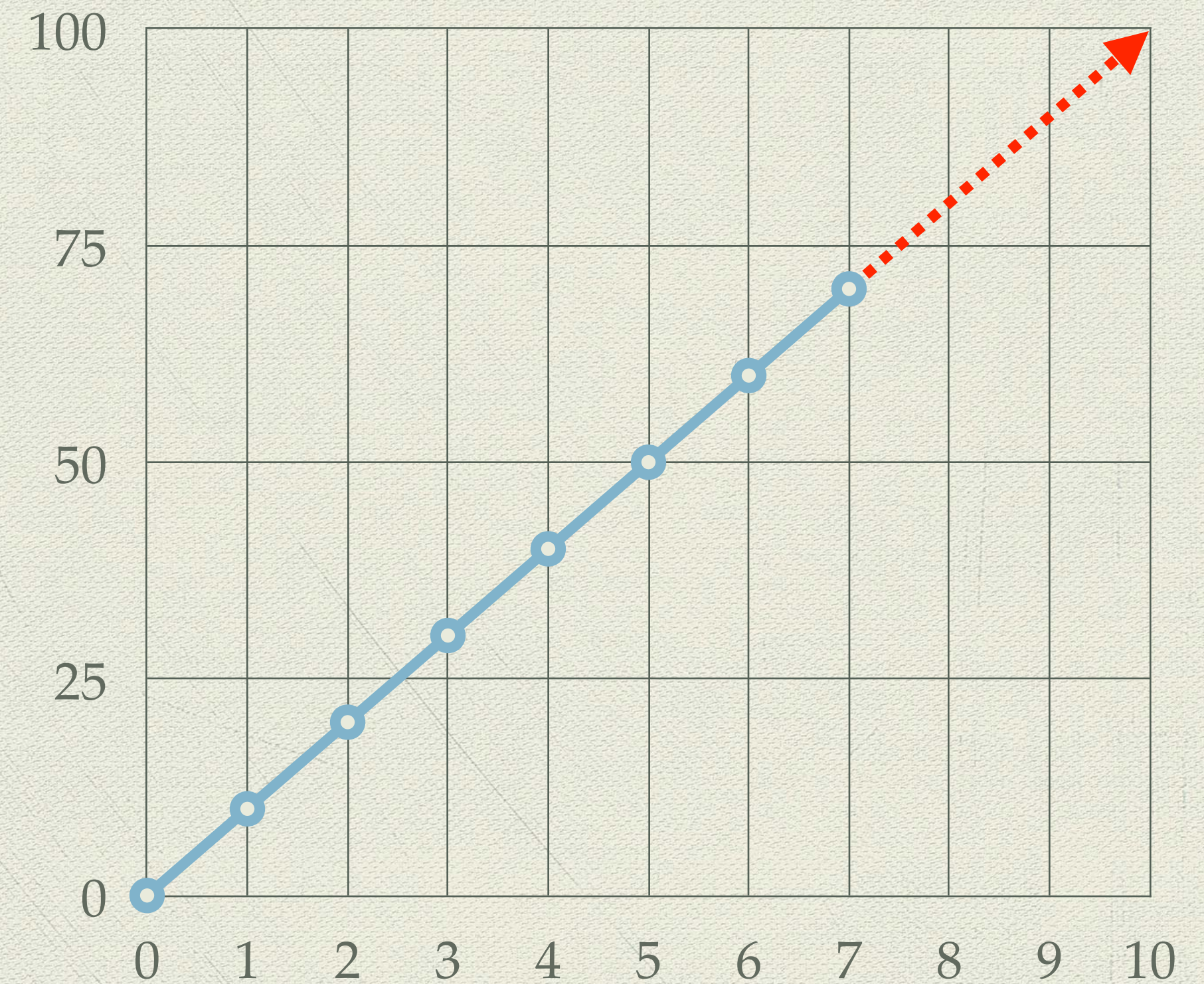


Graphing Analysis

- ◆ An integral part of understanding data is being able to construct and interpret graphs
- ◆ A picture-like representation makes data easier to see a trend or pattern that can be used to extrapolate data and predict an event

Graphing Analysis

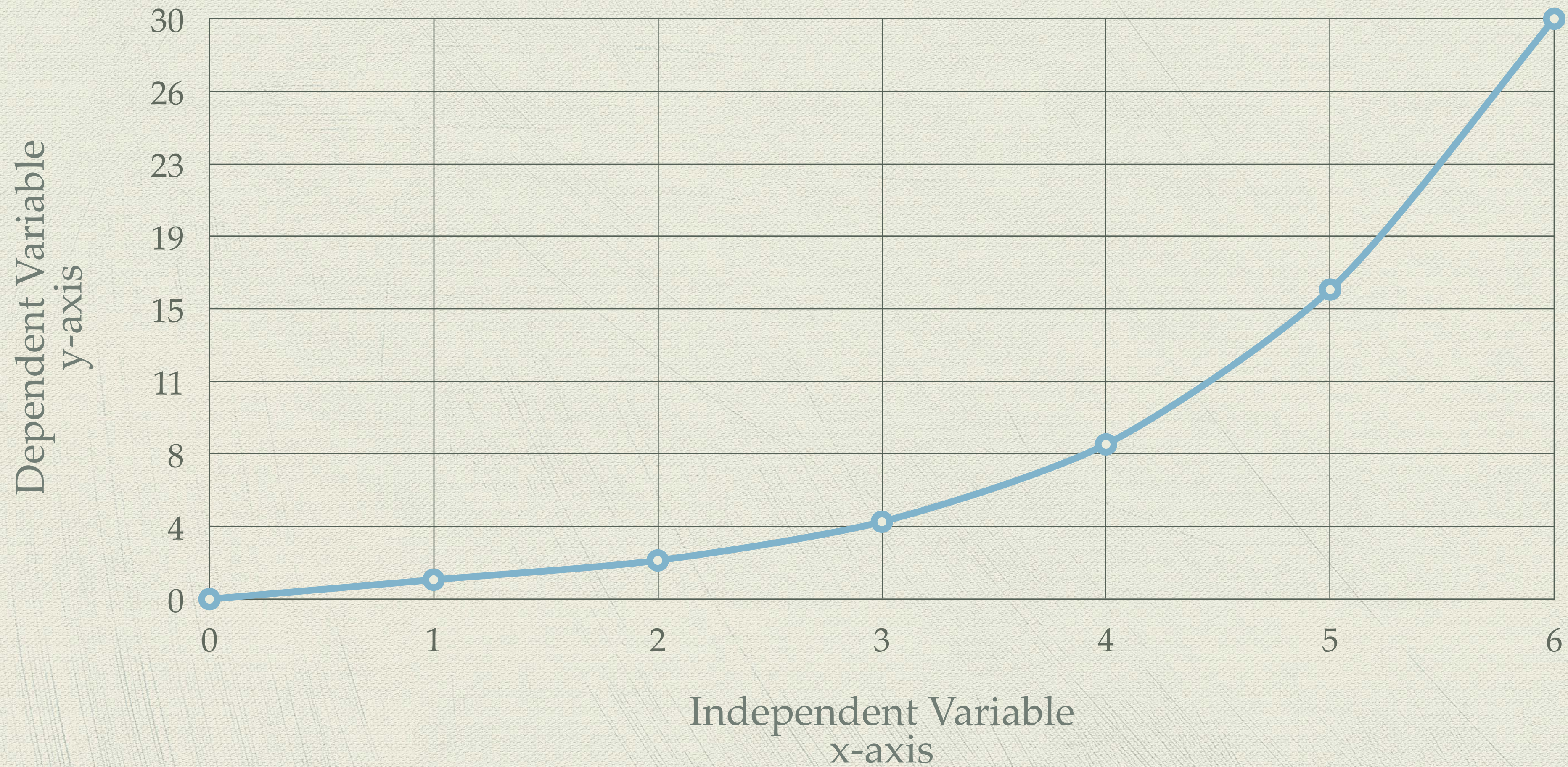
- ◆ Extrapolate - to infer or estimate by extending or projecting known information



Graphing Analysis

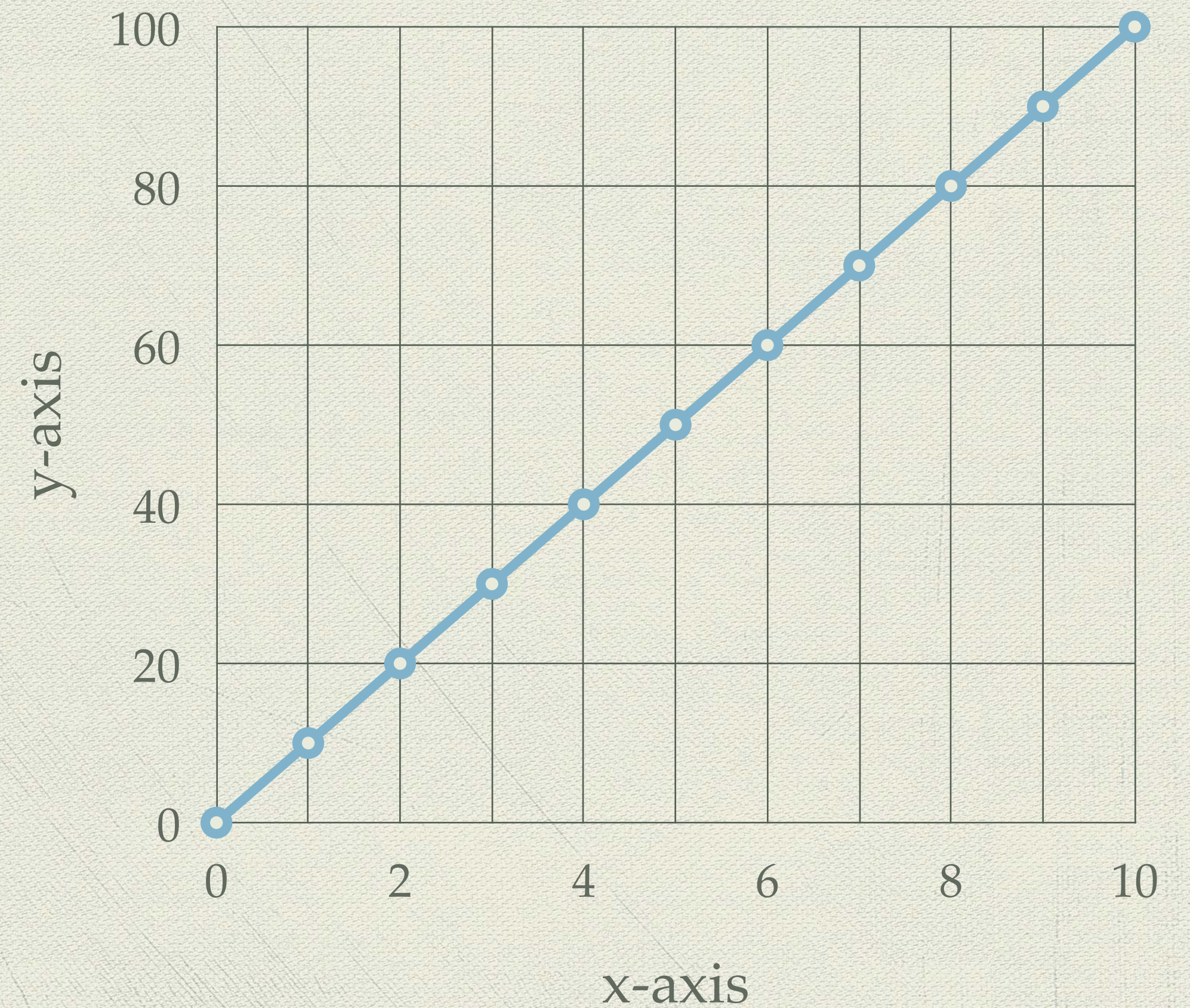
- ◆ Dependent Variable - the variable that is measured and affected in an experiment
- ◆ Independent Variable - the variable that stands alone and isn't changed by other factors

Graphing Analysis



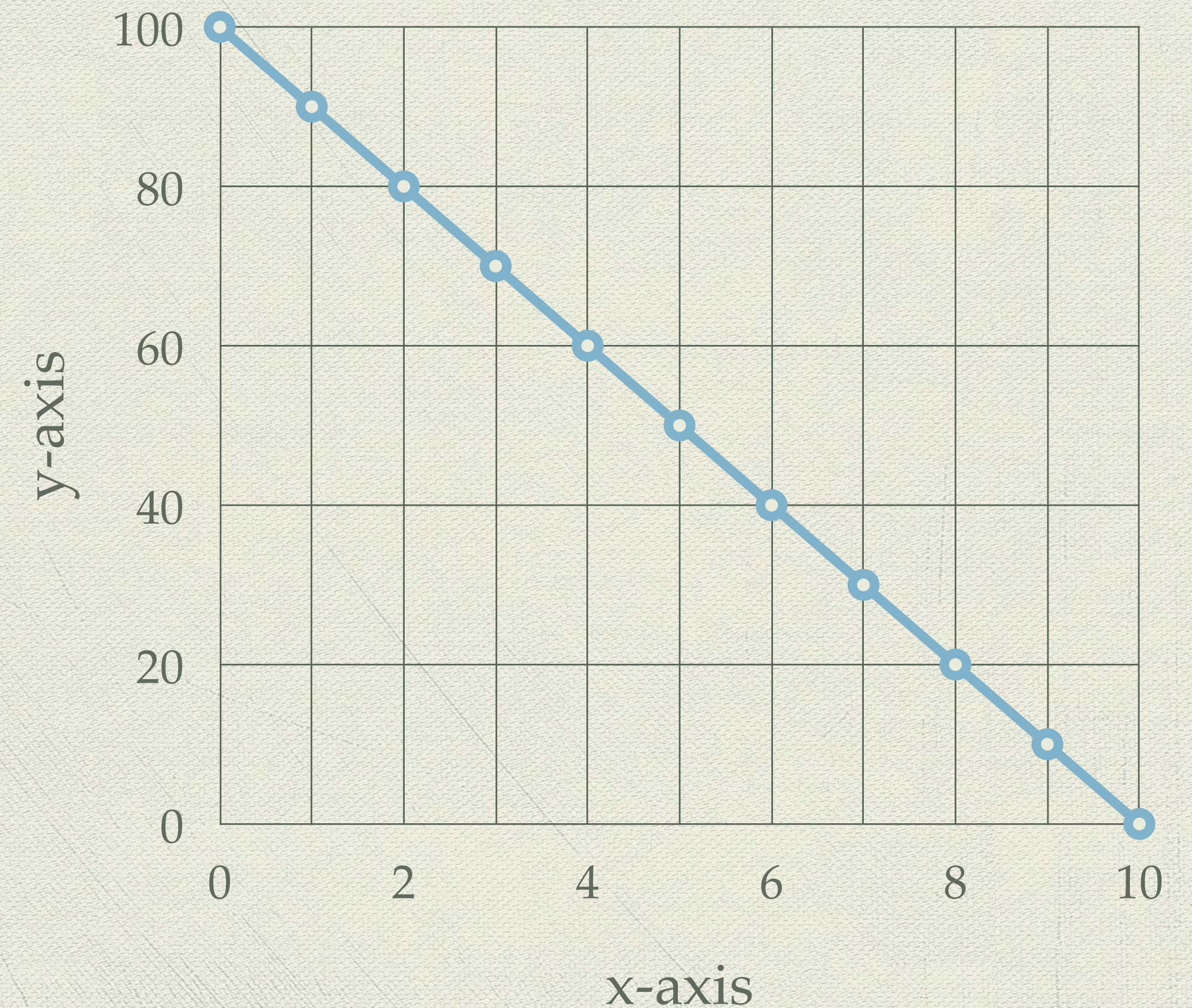
Graphing Analysis

◆ Direct Relationship - when the x-axis and y-axis increase



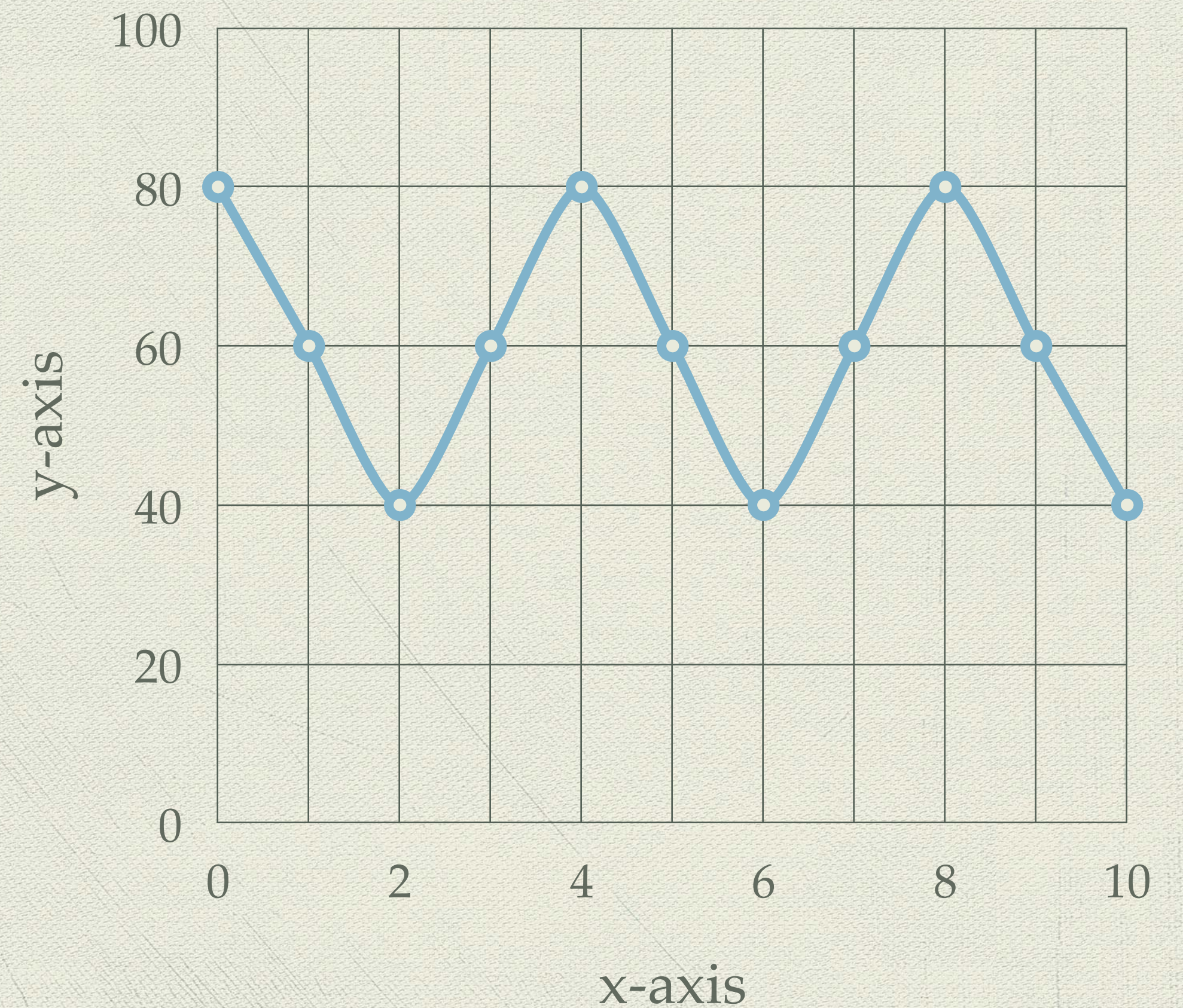
Graphing Analysis

◆ Inverse Relationship - when the x-axis increases and the y-axis decreases



Graphing Analysis

- ◆ Cyclic Change - a repeating pattern that occurs over and over again



Graphing Analysis

- ◆ Rate of Change - the speed at which a variable changes over a specific period of time

$$\text{Rate of Change} = \frac{\text{change in value}}{\text{time}}$$

Graphing Analysis

◆ Earth Science Reference Tables [E.S.R.T.]

$$\text{Eccentricity} = \frac{\text{distance between foci}}{\text{length of major axis}}$$

$$\text{Gradient} = \frac{\text{change in field value}}{\text{distance}}$$

$$\text{Rate of change} = \frac{\text{change in value}}{\text{time}}$$

$$\text{Density} = \frac{\text{mass}}{\text{volume}}$$

Graphing Analysis

- ◆ Summer accidentally released her balloon into the air. Ameesha, being an awesome scientist, recorded the altitude at one minute intervals for 5 minutes. Calculate the rate of change for the first 5 minutes using Ameesha's data.

Time [min]	Altitude [meters]
0	0
1	25
2	50
3	75
4	100
5	125

Graphing Analysis

$$\text{Rate of Change} = \frac{\text{change in value}}{\text{time}}$$