Chapter 2 - Relations

Hypotheses and Sources of Data

Hypotheses – a theory or statement that is either true or false

Primary Data – original data that a researcher gathers specifically for a particular experiment or survey

Example: you phone 100 families in your town to ask them how many pets they have

Secondary Data – data that someone else has already gathered for some other purpose

Example: you use data from Statistics Canada to determine the average number of families that have pets

Sampling

Population – the entire group of people or items that is being studied.

Sample – any group of people selected from a population.

Census – a survey of all members of a population.

Random Sample – a sample in which all members of a population have an equal chance of being chosen.

Simple Random Sample – choosing a specific number of members randomly from the entire population

Systematic Random Sample - choosing members of a population at fixed intervals from a randomly selected member.

Stratified Random Sample – dividing a population into distinct groups and then choosing the same fraction of members from each group.

Non –Random Sample – using a method that is not random to choose a sample from a population.

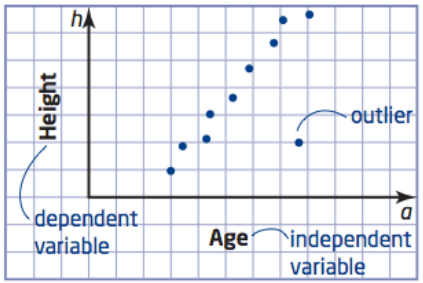
Scatter Plots

A **scatter plot** can help you see if there is a relationship between two variables.

Dependent Variable (y-axis) – a variable that is affected by some other variable

Independent Variable (x-axis) – a variable that affects the value of another variable

Outlier – measurement that differs significantly from the rest of the data.



Trends in Data

Interpolate – estimate a value between two measurements in a set of data.

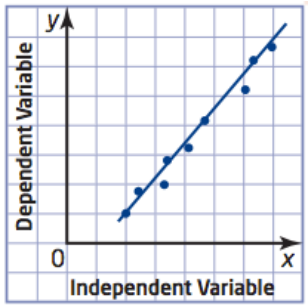
Extrapolate – estimate a value beyond the range of a set of data.

Linear Relation – a relation between two variables that forms a straight line when graphed.

Line of Best Fit – a straight line that comes closest to the points on a scatter plot.

Curve of Best Fit– a curve that comes closest to the points on a scatter plot of a non-linear relation.

Linear:



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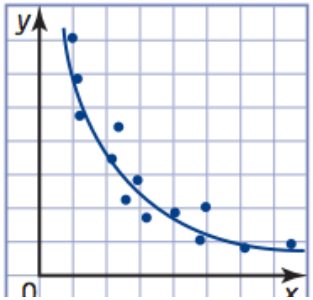
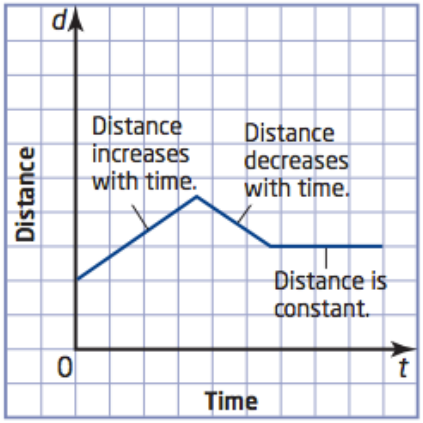
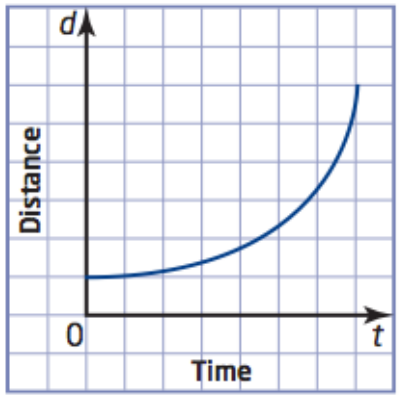


Distance Time Graphs

- A distance time-graph shows an object's distance from a fixed point over a period of time.
- On these graphs, a rising line shows that the distance increases as time increases. A falling line shows a decrease with time, and a horizontal line shows that the distance remains constant.



A curved line that is getting steeper while time is increasing represents **acceleration.**



A curved line that is getting less steep while time is increasing represents **deceleration.**