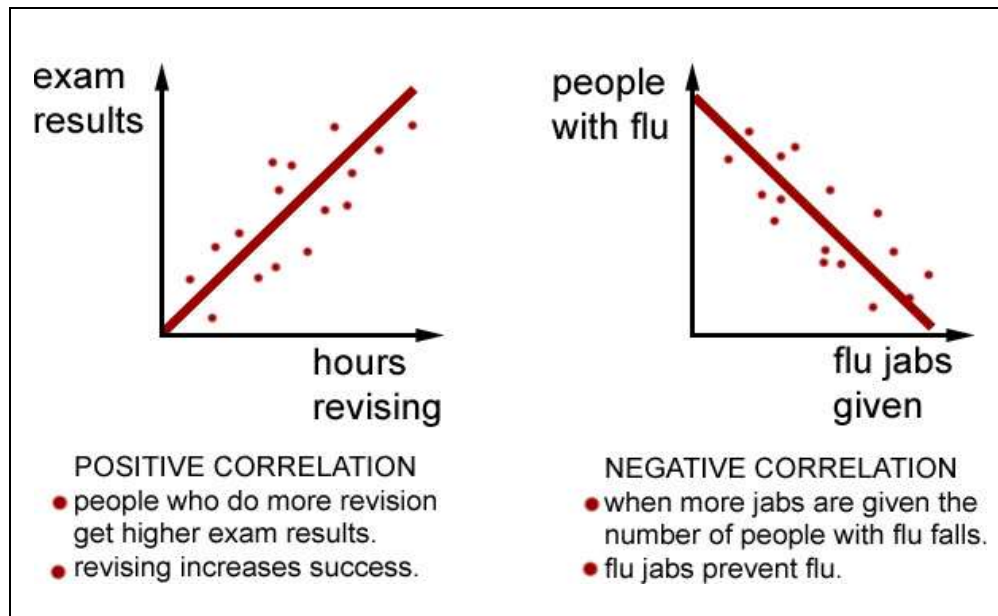


# SCATTERPLOTS

## INVESTIGATION

### CORRELATION AND CAUSATION



When 2 variables are compared statistically, a pattern called a correlation is sometimes evident.

A positive correlation occurs where both variables increase. Examples include:

- hours revising and exam results (The more study that is done, the higher the exam results tend to be.)
- baby age and baby length (As the baby's age increases, its length increases.)

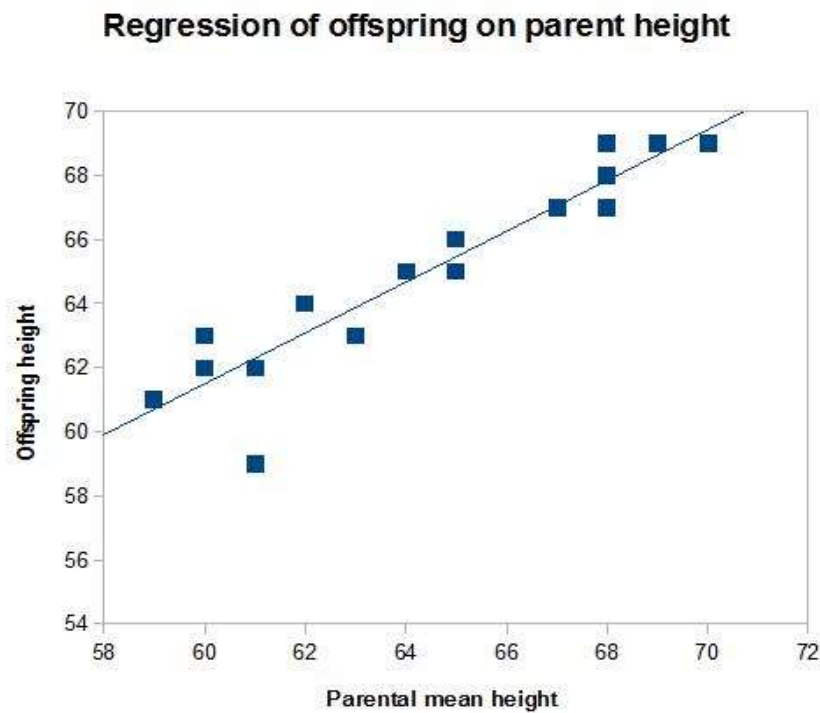
A negative correlation occurs where one variable increases while the other variable decreases. Examples include:

- the greater the number of flu vaccinations given and the fewer the number of sufferers from influenza
- the hotter the daily temperature is compared with and the weight of clothes we wear.

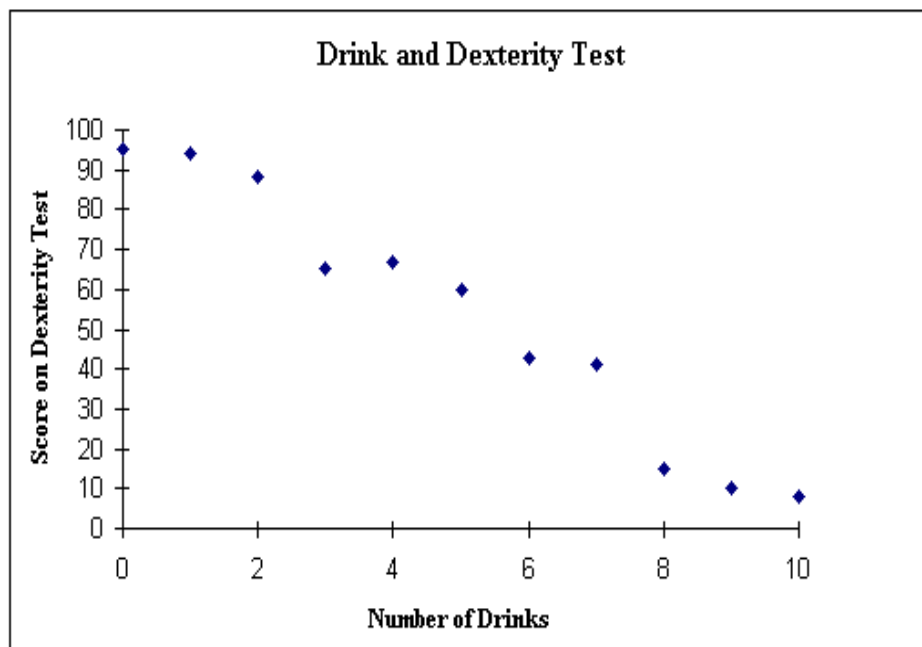
In all examples given above, there is not only correlation but also causation. It can be deduced that one variable directly influences the other variable. For example, the age of the baby directly influences its length. However, where there is a correlation, this does not mean that there is causation.

Your task is to examine each of the graphs and consider whether there is only correlation or whether causation occurred also. If causation exists, write down how one variable influenced the other variable.

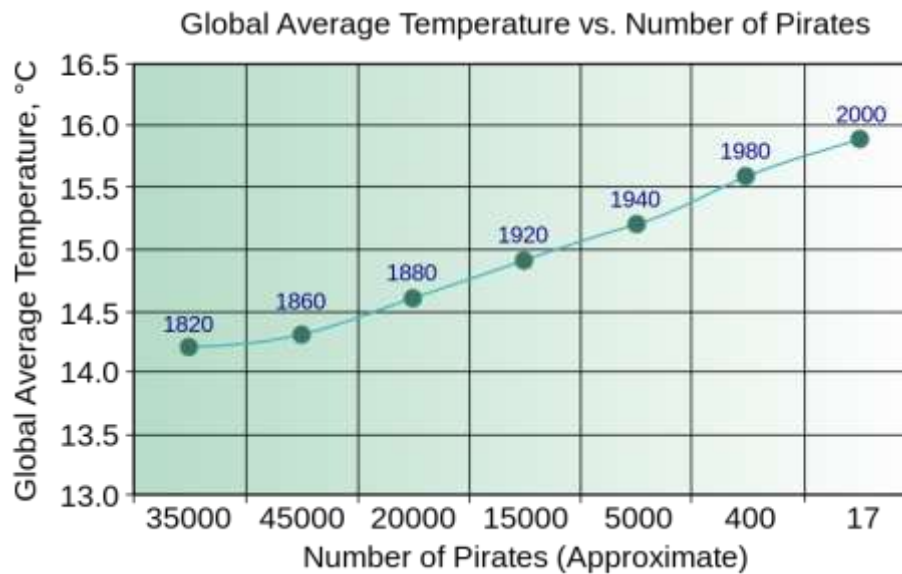
Graph1 – The relationship between parent's heights and their children's adult heights



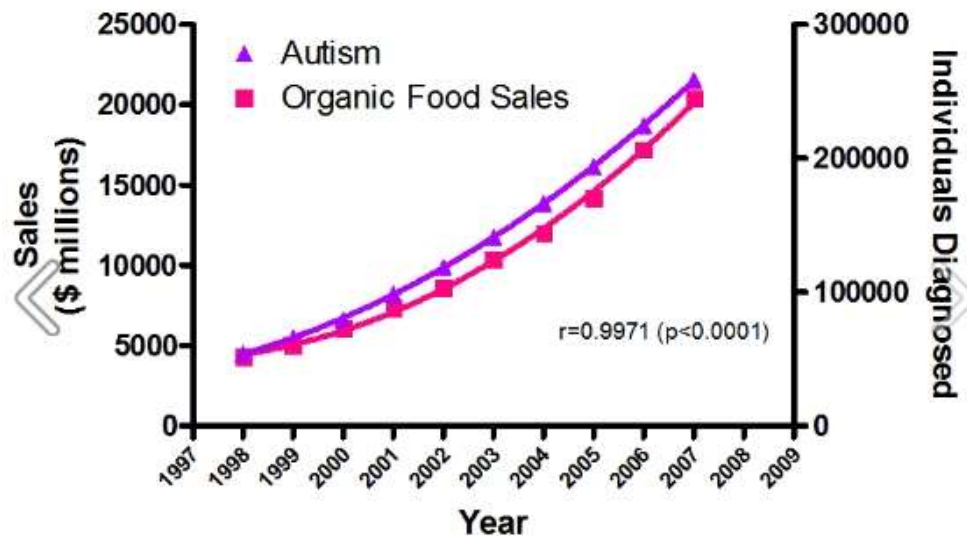
Graph2 – The relationship between the number of alcoholic drinks consumed and the ability to coordinate in a dexterity test



Graph 3 – The relationship between the world's temperatures and the number of pirates recorded in historical documents (Yes...This is real data by Bobby Henderson.)



Graph 4 – The relationship between the number of children diagnosed with autism and the sales of organic food



Sources: Organic Trade Association, 2011 Organic Industry Survey; U.S. Department of Education, Office of Special Education Programs, Data Analysis System (DANS), OMB# 1820-0043. \*Children with Disabilities Receiving Special Education Under Part B of the Individuals with Disabilities Education Act