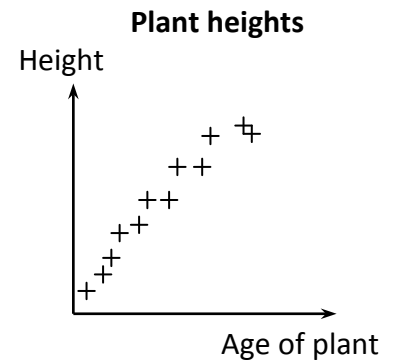




In this activity you will use simulations to help you to understand:

- how regression is used to find a relationship between two variables
- how a correlation coefficient is used to measure the strength of the relationship.



Information sheet

Regression

This is the analysis of the association between a dependent variable and one or more independent variables.

The association is usually given as an equation in terms of the dependent variables, from which values of the independent variable can be predicted.

The simplest case is that of linear regression, in which the regression equation of y on x is written as $y = a + bx$. The parameters, a and b , are called regression coefficients.

Correlation

This indicates the nature and strength of the relationship between two variables. The correlation is positive when each variable tends to increase or decrease as the other does. The correlation is negative when one variable tends to increase as the other decreases. Data pairs that show a close relationship are said to be highly or strongly correlated.

It is important to appreciate that high correlation need not imply a causal relationship. For example, the number of car owners and average daily sales of food in each of a number of cities are likely to be highly correlated, but this may simply be reflecting the size of the populations of these cities.

Try this

Go to <http://www.icse.xyz/discuss/regression/>

First read about the contents of this module, then work through the module using the recommended route given across the top of the webpage.

If you are short of time you could omit some of the sections – ask your teacher for advice.

Reflect on your work

- Explain what is meant by the terms regression and correlation.
- What is the difference between interpolation and extrapolation?
- If you find that $r = 1$, what can you say about the relationship between the variables? What if $r = -1$?
- What might a value of r near to zero indicate?
- Correlation does not imply causation. Explain what this means. Suggest a real-life example.