School administrators, Heads of Learning Area – Mathematics and teachers of Mathematics Essential General Year 12 are requested to note for 2027 the following minor syllabus changes. The syllabus is labelled as 'For teaching from 2027'.

Mathematics Essential | General Year 12 | Summary of minor syllabus changes for 2027

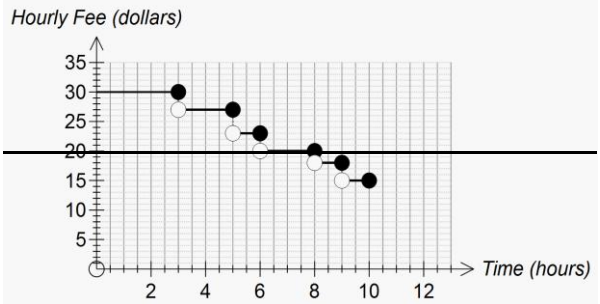
The content identified by ~~strikethrough~~ has been deleted from the syllabus and the content identified in *italic*s has been revised in the syllabus for teaching from 2027.

Glossary

Graphs in practical situations

~~**Step graph**~~

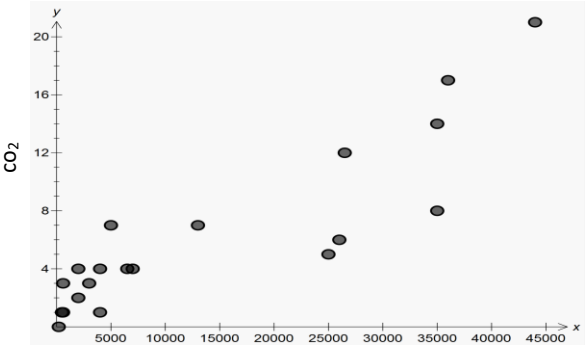
~~A graph consisting of one or more non-overlapping horizontal line segments that follow a step-like pattern.~~



Bivariate data scatter plot

A two-dimensional data plot using Cartesian co-ordinates to display the values of two variables in a bivariate data set.

For example, the scatterplot below displays the CO_2 emissions in tonnes per person (CO_2) plotted against gross domestic product per person in $US (~~gdp~~ *GDP*) for a sample of 24 countries in 2004. In constructing this scatterplot, GDP has been used as the ~~explanatory~~ *independent* variable.



~~gdp~~ *GDP*

Causality

A relationship between an ~~explanatory~~ *independent* and a ~~response~~ *dependent* variable is said to be causal if the change in the ~~explanatory~~ *independent* variable actually causes a change in the ~~response~~ *dependent* variable. Simply knowing that two variables are associated, no matter how strongly, is not

sufficient evidence by itself to conclude that the two variables are causally related.

Possible explanations for an observed association between an ~~explanatory~~ *independent* and a ~~response~~ *dependent* variable include:

- the ~~explanatory~~ *independent* variable is actually causing a change in the ~~response~~ *dependent* variable
- there may be causation, but the change may also be caused by one or more uncontrolled variables whose effects cannot be disentangled from the effect of the ~~response~~ *dependent* variable; this is known as confounding
- there is no causation, the association is explained by at least one other variable that is associated with both the ~~explanatory~~ *independent* and the ~~response~~ *dependent* variable; this is known as a common response
- the ~~response~~ *dependent* variable is actually causing a change in the ~~explanatory~~ *independent* variable.

~~Explanatory~~ *Independent* variable

When investigating relationships in bivariate data, the ~~explanatory~~ *independent* variable is the variable used to explain or predict a difference in the ~~response~~ *dependent* variable.

For example, when investigating the relationship between the temperature of a loaf of bread and the time it has spent in a hot oven, temperature is the ~~response~~ *dependent* variable and time is the ~~explanatory~~ *independent* variable.

Extrapolation

In the context of fitting a linear relationship between two variables, extrapolation occurs when the fitted model is used to make predictions using values of the ~~explanatory~~ *independent* variable that are outside the range of the original data. Extrapolation is a dangerous process as it can sometimes lead to quite erroneous predictions.

Interpolation

In the context of fitting a linear relationship between two variables, interpolation occurs when the fitted model is used to make predictions using values of the ~~explanatory~~ *independent* variable that lie within the range of the original data. See also extrapolation.