Covariance and correlation are both measures of the relationship between two variables, but they differ in terms of the interpretation and scale of measurement.

Covariance measures the direction and strength of the linear relationship between two variables. It indicates how changes in one variable are associated with changes in another variable. A positive covariance suggests that the variables tend to move in the same direction (i.e., when one variable increases, the other variable also tends to increase), while a negative covariance suggests an inverse relationship (i.e., when one variable increases, the other variable tends to decrease). However, the magnitude of covariance does not provide a standardized measure of the strength of the relationship.

On the other hand, correlation measures not only the direction but also the strength of the linear relationship between two variables. It quantifies the extent to which two variables are related on a scale from -1 to +1. A correlation coefficient of +1 indicates a perfect positive linear relationship, a correlation coefficient of -1 indicates a perfect negative linear relationship, and a correlation coefficient of 0 indicates no linear relationship. Correlation coefficients are standardized, meaning they are not affected by the scale or units of measurement of the variables involved.

In summary, covariance indicates the direction of the relationship between two variables, while correlation measures the strength and direction of the relationship on a standardized scale.