Acceleration is the rate at which an object changes its velocity. It is a vector quantity, which means that it has both magnitude and direction.

When an object accelerates, its velocity changes, either by increasing or decreasing in speed or by changing direction. The standard unit of acceleration is meters per second squared (m/s^2).

Acceleration is calculated by dividing the change in velocity by the time taken for that change to occur. Mathematically, it can be expressed as:

Acceleration = (Change in Velocity) / (Time taken for change)

The direction of acceleration can be the same as the direction of velocity, in which case the object is said to be speeding up. Alternatively, the direction of acceleration can be opposite to the direction of velocity, in which case the object is said to be slowing down or decelerating. Finally, acceleration can also occur when an object changes its direction of motion, even if its speed remains constant.