

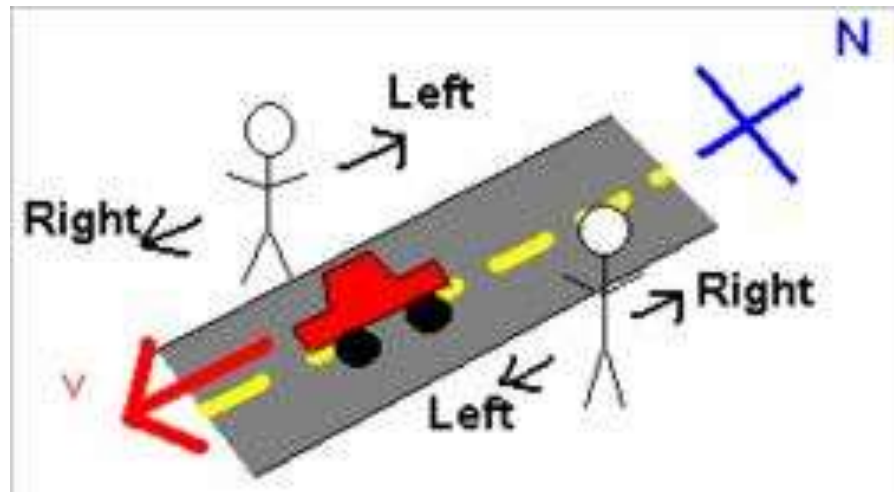
The background features abstract, overlapping geometric shapes in various shades of green, ranging from light lime to dark forest green. These shapes are primarily located on the left and right sides of the frame, creating a dynamic, layered effect. The central area is a clean white space where the text is placed.

Motion

How things move

Frame of Reference

- ▶ In order to know that something is moving, and to know how it is moving we need a frame of reference.

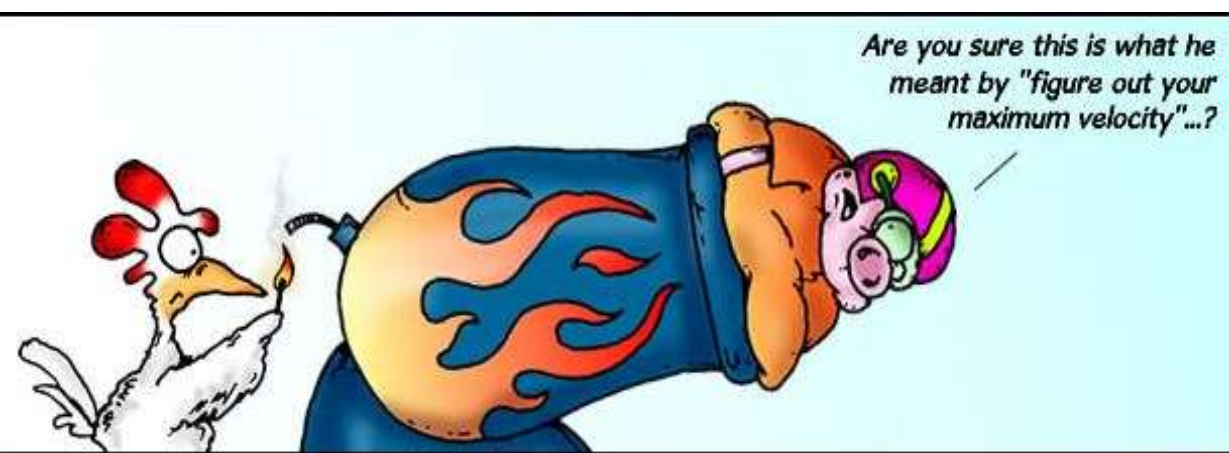


Distance vs Displacement

Motion: the displacement of an object in relation to objects that are considered to be stationary.

Distance: The total length traveled in a given time frame; scalar quantity

Displacement: that change of position in a particular direction from a specific starting point. Vector quantity (Units: m, km)



Speed vs Velocity

Speed: the time rate of motion. How fast something is moving; scalar quantity.

Average Speed: found by dividing the TOTAL distance by the lapsed time.

Velocity: speed in a particular direction; vector quantity. (Units: $\frac{m}{s}$)

Constant Velocity: $v = \frac{d}{t}$

Acceleration

Acceleration: the time rate of change of velocity; vector quantity. (Units: $\frac{m}{s^2}$)

Deceleration: occurs in the opposite direction of acceleration. The direction of acceleration is described as either positive or negative.

(Positive = acceleration; Negative = deceleration)