

Speed

Calculating Speed

SPEED — a measure of how far you travel in a set amount of time.

$$\text{Speed} = \frac{\text{Distance}}{\text{Time}}$$

(Average)

Three common units for speed:

- 1 metres per second
m/s
- 2 miles per hour
mph or miles/h
- 3 kilometres per hour
km/h

Relative Motion

RELATIVE SPEED — the speed an object is moving from the perspective of another moving object.

Moving in **opposite** directions — **add** speeds.



30 km/h → ← 25 km/h

$$\text{Relative speed} = 30 + 25 = 55 \text{ km/h}$$

Moving in **same** direction — **subtract** speeds.



20 mph → → 30 mph →

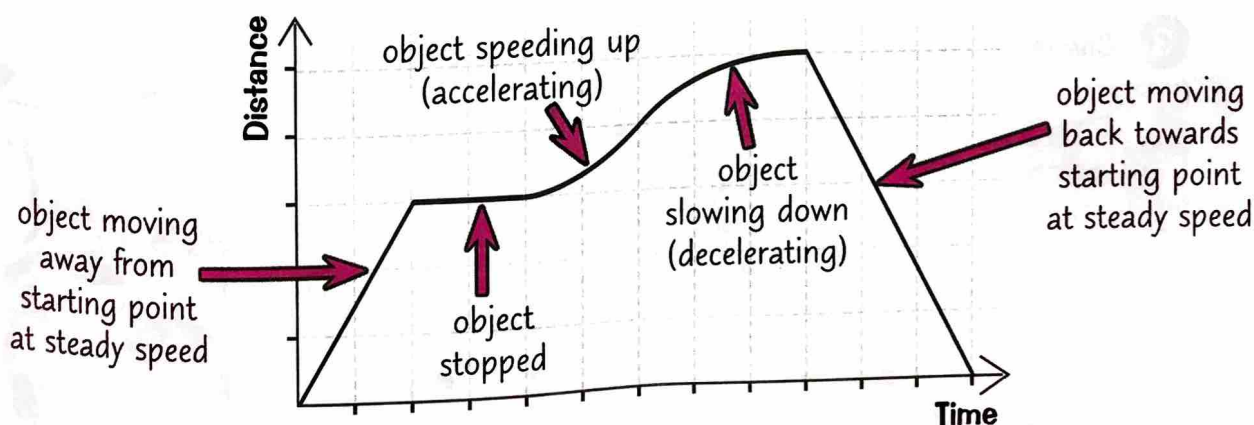
$$\text{Relative speed} = 30 - 20 = 10 \text{ mph}$$

This is the speed of the car relative to the tractor.

These two rules only work for objects moving on the same straight line.

Distance-Time Graphs

DISTANCE-TIME GRAPH — a graph that shows the distance travelled by an object over time.



The steeper the slope (gradient), the faster the object is moving.