



WHAT ARE DISTANCE AND DISPLACEMENT?

- ◆ Distance is length (e.g. 100 metres, _____)
- ◆ Displacement is distance in a particular direction (e.g. 100 metres to the right, _____)

WHAT ARE SPEED AND VELOCITY?

- ◆ Speed is the rate of movement (e.g. 50km/h, _____)
- ◆ Velocity is speed in a particular direction (e.g. 50 km/h north, _____)

Questions – Speed

1. A motorbike travels 100 metres in 2.5 seconds. At what is it travelling?
2. A rocket can move 32 kilometres in 4 seconds. At what speed is it moving?
3. At what speed in m/s is a skateboarder moving if he can skate 6 kilometres in 10 minutes?
4. A red Ferrari zooms over 500 metres in 4 seconds. What is its speed?
5. How long would it take a snail to slither 20 metres at 5 metres per hour?
6. How many seconds does it take an Indy racecar to travel a 240 metre straight at 80 m/s?
7. Fred's car travels at 100 km/h for 3 hours and then 90 km/h for 4 hours. What is the total distance travelled, the total time of travel and the average speed?
8. Convert 100 km/h to m/s. (Hint: Change kilometres to metres, and hours to seconds first.)
9. Convert 10 m/s to km/h.

Answers – Speed

1. 40 m/s 2. 8 km/s 3. 10 m/s 4. 125 m/s 5. 4 h 6. 3 s
7. 660 km, 7 h, 94.3 km/h 8. 27.8 m/s 9. 36 km/h



WHAT IS ACCELERATION?

- ◆ Acceleration is the rate of change of _____. (When a car accelerates, it speeds up. When a car decelerates, it slows _____.)
- ◆ Acceleration Rule
Acceleration = (Final velocity - Initial velocity) / Time
 $a = (v_2 - v_1) / t$
- ◆ Earth's Gravitational Acceleration (g) is the acceleration of an object as it _____ to earth at _____ m/s^2
This means that an object that falls starts at 0m/s, and then every second, its speed _____ by 9.8m/s.

Questions - Acceleration

1. A car accelerates from 20 m/s to 40 m/s in 5 seconds. What is its acceleration?
2. A motorbike speeds up from a standing start (that is, 0 m/s) to 30 m/s in 4 seconds. How fast is its acceleration?
3. When she sees the red traffic light, Marie brakes to a halt from a speed of 70 metres per second in just 2 seconds. What is her deceleration?
4. A skydiver falling from an aircraft falls at $9.8 m/s^2$. What is his speed after 3 seconds?

Answers – Acceleration

1. $4 m/s^2$ 2. $7.5 m/s^2$ 3. $35 m/s^2$ 4. 29.4 m/s

