Dimensional analysis

Tuesday, 21 November 2023 14:59

units - we fix this

speed : m/s

length of a site : m

timesteps : seconds.

Average car length = 4-5 m (in UK)

If car moves 1 site, it travels 4m

Case 1: if car length = 4m

Let car have velocity 1 unit (want this unit to be m/s)

Then in 1 timestep car will move 4 m

$\therefore$ 1 timestep = 4 seconds

Then car with v = 1 m/s will move 1 site (4m)

in 1 timestep (4 s)

Case 2: If car length = 5m

Let car have velocity 1 unit (want this unit to be m/s)

Then in 1 timestep car will move 4 m

$\therefore$ 1 timestep = 4 seconds

Then car with v = 1 m/s will move 1 site (4m)

in 1 timestep (4 s)

https://www.iam-bristol.org.uk/index.php/articles/associate-s-guide/43-metres-travelled-per-second-table

Speed	Metres per second	
10mph	4.5m	(15ft)
20mph	9.0m	(30ft)
30mph	13.5m	(45ft)
40mph	18.0m	(60ft)
50mph	22.5m	(74ft)
60mph	27.0m	(89ft)
70mph	31.5m	(104ft)
80mph	36.0m	(119ft)
90mph	40.5m	(133ft)
100mph	45.0m	(148ft)