

Speed

Starter

- (Review of last lesson)**
Tomatoes are sold in a supermarket at 85p per kilo or 30p per lb. Which is the lower price?
- (Review of previous material)**
Convert: (a) 17 m/s to km/h (b) 65 mph to metres per second
- How long would it take a runner to complete 5 km if they are travelling at 16 km/h?

Notes

Here are the formulae connecting speed, distance and time:

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

When calculating distance or speed and time is given in mixed units (e.g. hours and minutes), convert the time into just hours (or just minutes).

N.B. Make sure the units are consistent before doing the calculation i.e. if speed is in km/h and the distance is in metres, convert the distance into kilometres.

E.g. 1 Find the distance travelled at a speed of 80 mph for 25 minutes.

Working:

$$25 \text{ minutes} \equiv \frac{25}{60} \text{ hours}$$
$$\text{Distance} = 80 \times \frac{25}{60} = 33.\dot{3} \text{ miles}$$

E.g. 2 A racing car completed a distance of 544 km in 3 hours 24 minutes. What was her average speed in?

E.g. 3 A car travelling at 70 km/h is 700 m behind another car travelling at 68 km/h in the same direction. How long will it take for the first car to catch the second?

E.g. 4 A car travels 120 km at an average speed of 70 km/h. On its return, traffic causes its average speed to drop to 60 km/h. Calculate its average speed for the journey to 3 s.f..

Video: [Speed, distance, time](#)

[Solutions to Starter and E.g.s](#)

Exercise

9-1 class textbook:	p310 M10.3 Qu 1-15 odd
A*-G class textbook:	p273 M10.3 Qu 1-17 odd
9-1 homework book:	p104 M10.3 Qu 1-14
A*-G homework book:	p76 M10.3 Qu 1-10

Summary

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

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

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

When calculating distance or speed and time is given in mixed units (e.g. hours and minutes), convert the time into just hours (or just minutes).

