

Calculating Speed, Distance and Time

Starter

- (Review of last lesson)** A Formula 1 car travels 435 km in 1h 25m. Calculate its average speed to the nearest km/h.
- Travelling at 60 mph, how far would you travel in:
 - 3 hours
 - 30 minutes?
- A train's average speed is 90 km/h. How long would it take to cover
 - 270 km
 - 144 km?
 For (b) give your answer in hours and minutes.

Notes

From $\text{Speed} = \frac{\text{Distance}}{\text{Time}}$ we can rearrange to get:

$$\text{Distance} = \text{Speed} \times \text{Time} \quad \text{and} \quad \text{Time} = \frac{\text{Distance}}{\text{Speed}}$$

$$D = S \times T \quad S = \frac{D}{T} \quad T = \frac{D}{S}$$

When solving problems, write down the information you know, then choose the correct formula to use.

- E.g. 1** An albatross is cruising at an average speed of 85 km/h. What distance does it cover in
- 2 hours
 - 55 minutes?

Working: (a) $S = 85, T = 2$
Using $D = S \times T$: $D = 85 \times 2 = 170$
 The distance covered is 170 km.

(b) **Convert the times to hours:** $55 \text{ minutes} \equiv \frac{55}{60} = \frac{11}{12} \text{ hours}$
 $S = 85, T = \frac{11}{12}$
Using $D = S \times T$: $D = 85 \times \frac{11}{12} = 77\frac{11}{12} \approx 77.9$
 The distance covered is $77\frac{11}{12} \approx 77.9$ km.

- E.g. 2** A train travels at an average speed of 120 km/h between two stations. If it sets off at 06 : 40, what times does it reach its destination given that the stations are 80 km apart.

- E.g. 3** A cyclist goes uphill for 5 minutes at 15 km/h. He then turns around and cycles down the hill and it takes 2 minutes. What was his average speed to go up and down the hill?

E.g. 4 A bus travels the 195 km from Cardiff to Exeter at an average speed of 75 km/h. It then travels back to Cardiff at an average speed of 81 km/h. If the bus spent half an hour at Exeter before returning, how long did the trip take, to the nearest minute?

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

Video: [Converting times](#)

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

Exercise

p114 Ex 18.2 Qu 1aceg, 2aceg, 3, 5, 7-10

Summary

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

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

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