

## Speed, Distance, Time

Videos 299 on Corbettmaths

Examples

Warm up



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Question 1: Convert the times from hours/minutes into hours, without a calculator.

- e.g. 1      45 minutes = 0.75 hours  
e.g. 2      1 hour 30 minutes = 1.5 hours

- |                        |                        |                        |
|------------------------|------------------------|------------------------|
| (a) 15 minutes         | (b) 30 minutes         | (c) 45 minutes         |
| (d) 20 minutes         | (e) 40 minutes         | (f) 2 hours 30 minutes |
| (g) 1 hour 15 minutes  | (h) 3 hours 45 minutes | (i) 2 hours 40 minutes |
| (j) 5 hours 30 minutes | (k) 7 hours 20 minutes | (l) 4 hours 15 minutes |

Question 2: Convert the times from hours/minutes into hours.  
You may use a calculator if needed.

- |                        |                        |                        |
|------------------------|------------------------|------------------------|
| (a) 18 minutes         | (b) 54 minutes         | (c) 1 hour 3 minutes   |
| (d) 1 hour 36 minutes  | (e) 2 hours 48 minutes | (f) 2 hours 33 minutes |
| (g) 8 hours 51 minutes | (h) 3 hours 21 minutes | (i) 27 minutes         |

Question 3: Convert the times from hours/minutes into hours.  
Give each answer to 3 decimal places.

- |                        |                        |                        |
|------------------------|------------------------|------------------------|
| (a) 44 minutes         | (b) 8 minutes          | (c) 1 hour 50 minutes  |
| (d) 2 hours 10 minutes | (e) 4 hours 26 minutes | (f) 3 hours 29 minutes |
| (g) 5 hours 2 minutes  | (h) 2 hours 55 minutes | (i) 59 minutes         |

Question 4: Convert the times from hours into hours/minutes, without a calculator.

- |                     |                     |                      |
|---------------------|---------------------|----------------------|
| (a) 0.75 hours      | (b) 1.25 hours      | (c) 5.5 hours        |
| (d) 1.3333... hours | (e) 2.6666... hours | (f) 10.75 hours      |
| (g) 3.25 hours      | (h) 0.5 hours       | (i) 22.3333... hours |

Question 5: Convert the times from hours into hours/minutes.  
You may use a calculator if needed.

- |                |                |                |
|----------------|----------------|----------------|
| (a) 0.7 hours  | (b) 0.1 hours  | (c) 0.9 hours  |
| (d) 1.3 hours  | (e) 3.6 hours  | (f) 6.7 hours  |
| (g) 0.85 hours | (h) 1.15 hours | (i) 3.45 hours |

Question 6: Convert the times from hours into hours/minutes.

- |                      |                      |                      |
|----------------------|----------------------|----------------------|
| (a) 0.93333... hours | (b) 0.48333... hours | (c) 1.06666... hours |
| (d) 2.73333... hours | (e) 3.68333... hours | (f) 2.18333... hours |
| (g) 8.01666... hours | (h) 4.46666... hours | (i) 1.76666... hours |

## Workout

Question 1: Calculate the average speeds for each of the following, without using a calculator.

- |   |  |
|---|--|
| (a) A car travels 60 miles in 2 hours         | (b) A lorry travels 120 miles in 3 hours     |
| (c) A cyclist travels 45 miles in 5 hours     | (d) A jogger travels 30km in 4 hours         |
| (e) A runner runs 100 metres in 10 seconds    | (f) A car travels 195 miles in 3 hours       |
| (g) A helicopter travels 425 miles in 5 hours | (h) A helicopter flies 840 miles in 7 hours  |
| (i) A dog runs 216 metres in 12 seconds       | (j) An airplane travels 984 miles in 6 hours |
| (k) A bird flies 19 miles in 2 hours          | (l) A car travels 600km in 8 hours           |

Question 2: Calculate the average speeds for each of the following, without using a calculator.

- |   |  |
|---|--|
| (a) A car travels 20 miles in 30 minutes        | (b) A lorry travels 32 miles in 30 minutes     |
| (c) A bird flies 17 kilometres in 30 minutes    | (d) A man jogs 2 kilometres in 15 minutes.     |
| (e) A helicopter flies 18 miles in 15 minutes   | (f) An F1 car travels 32 miles in 15 minutes.  |
| (g) A dog runs 3 kilometres in 10 minutes       | (h) A jet travels 23 miles in 6 minutes.       |
| (i) A car travels 12 miles in 20 minutes        | (j) A car travels 9 miles in 12 minutes        |
| (k) A motorcycle travels 36 miles in 40 minutes | (l) A car travels 27 kilometres in 45 minutes. |

Question 3: Calculate the average speeds for each of the following.

- (a) A car travels 63 miles in 1 hour 30 minutes
- (b) A man runs 15 miles in 2 hours 30 minutes
- (c) A helicopter flies 238 miles in 3 hours 30 minutes
- (d) A car travels 85.5 miles 2 hours 15 minutes
- (e) An airplane flies 315 kilometres in 1 hour 45 minutes
- (f) A lorry travels 351 miles in 6 hours 45 minutes
- (g) A car drives 154 miles in 2 hours 20 minutes
- (h) A helicopter flies 160 kilometres in 1 hour 40 minutes

Question 4: Calculate the average speeds for each of the following.

- (a) A man jogs 6 miles in 1 hour 12 minutes
- (b) A motorcycle drives 130 miles in 2 hours 36 minutes
- (c) A helicopter flies 152 miles in 1 hour 54 minutes
- (d) A plane travels 1272 kilometres in 5 hours 18 minutes
- (e) A car travels 98 miles in 2 hours 27 minutes
- (f) A rocket travels 750 miles in 3 minutes
- (g) A car travels 6.4 miles in 7 minutes. Give your answer to 2 decimal places.
- (h) A ship sails 105 miles in 4 hours 28 minutes. Give your answer to 2 decimal places.
- (i) A plane travels 400 miles in 1 hour 55 minutes. Give your answer to 2 decimal places.
- (j) A car drives 500 kilometres in 7 hours 13 minutes. Give your answer to 2 decimal places.

Question 5: Calculate how far each of the following travels.

- (a) A car travels at a speed of 50mph for 3 hours.
- (b) A plane flies at a speed of 230 kilometres per hour for 2 hours.
- (c) A lorry drives for 4 hours at a speed of 45 miles per hour.
- (d) A man runs at a speed of 8 metres per second for 15 seconds.
- (e) A helicopter flies for 8 hours at a speed of 80 miles per hour.
- (f) A dog runs at a speed of 15 m/s for 20 seconds.
- (g) A car travels at a speed of 48 mph for 3 hours.
- (h) A truck travels at a speed of 29 mph for 5 hours.

Question 6: Calculate the distance travelled by each of the following.

- (a) A car drives at a speed of 60mph for 30 minutes.
- (b) A taxi travels for 30 minutes at a speed of 28 mph.
- (c) A car travels at a speed of 44mph for 15 minutes.
- (d) A lorry drives at a speed of 51mph for 20 minutes.
- (e) An airplane travels at a speed of 441mph for 20 minutes.
- (f) A car drives at a speed of 48mph for 45 minutes.
- (g) A helicopter flies at a speed of 72miles per hour for 10 minutes
- (h) A bird flies for 40 minutes at a speed of 60 kilometres per hour.

Question 7: Work out the distance travelled by each of the following.

- (a) A car drives at a speed of 40mph for 1 hour 30 minutes
- (b) A bird flies at a speed of 32 kilometres per hour for 1 hour 30 minutes
- (c) A lorry travels for 2 hours 30 minutes at a speed of 52 mph
- (d) A F1 race car drives for 1 hour 15 minutes at a speed of 124 mph
- (e) A helicopter flies at a speed of 104 mph for 1 hour 45 minutes
- (f) A car drives at a speed of 58 mph for 3 hours 15 minutes
- (g) A man runs at 6 mph for 1 hour 24 minutes
- (h) A car drives for 2 hours 54 minutes at a speed of 50 mph
- (i) A plane flies at a speed of 306 kilometres per hour for 3 hours 20 minutes
- (j) A hot air balloon flies at a speed of 18 mph for 1 hour 40 minutes
- (k) A bird flies for 4 hours 36 minutes at a speed of 40 kilometres per hour.
- (l) A helicopter travels at 98mph for 5 hours 6 minutes.
- (m) A car travels at 40 mph for 1 hour 7 minutes. Give your answer to 2 decimal places.
- (n) A lorry drives at 65 mph for 2 hours 19 minutes. Give your answer to 2 decimal places.
- (o) A car drives at 70 mph for 44 minutes. Give your answer to 2 decimal places.
- (p) A car drives at 32 mph for 1 minute. Give your answer to 2 decimal places.

Question 8: Work out the distance travelled by each of the following.

- (a) A runner runs at a speed of 8m/s for 2 minutes
- (b) A jog runs at a speed of 4m/s for 10 minutes.
- (c) A car drives at 60mph for 90 seconds.
- (d) A lorry drives at 30 mph for 150 seconds.

Question 9: Work out how long each of the journeys take.

- (a) A car drives 120 miles at a speed of 40 mph.
- (b) A lorry drives 250 miles at a speed of 50 mph.
- (c) A bird flies 330 kilometres at a speed of 55 kilometres per hour.
- (d) An object travels 48 miles at speed of 16 mph.
- (e) A man runs 240 metres at a speed of 6m/s
- (f) A dog runs 168 metres at a speed of 12m/s
- (g) A lorry travels 240 miles at a speed of 60mph.
- (h) A helicopter travels 345 miles at a speed of 115 mph.
- (i) A plane travels at a speed of 250 mph and covers a distance of 2250 miles.

Question 10: Calculate how long each journey lasts.  
Give each answer in hours and minutes.

- (a) A car travels 100 miles at a speed of 40mph.
- (b) A lorry travels 90 miles at a speed of 60 mph.
- (c) A bus drives at a speed of 48mph and covers a distance of 60 miles.
- (d) A helicopter flies 105 kilometres at a speed of 140 km/h
- (e) A bird covers a distance of 95 miles at a speed of 20 miles per hour.
- (f) A car travels at 50 mph and covers a distance of 110 miles.
- (g) A lorry drives a distance of 452.4 kilometres at a speed of 52 km/h.
- (h) A bird flies 80 miles at a speed of 15 miles per hour
- (i) A ship sails 208 miles a speed of 24 miles per hour
- (j) A jet flies at a speed of 480km/h and covers a distance of 2088 kilometres
- (k) A racing car drives 256 miles at a speed of 120 mph
- (l) A helicopter flies 764 kilometres at a speed of 80 km/h

Question 11: Change the following speeds into metres per second.

- |             |            |            |             |
|-------------|------------|------------|-------------|
| (a) 360km/h | (b) 18km/h | (c) 36km/h | (d) 72km/h  |
| (e) 10 km/h | (f) 40km/h | (g) 2 km/h | (h) 4.5km/h |

Question 12: Change the following speeds into kilometres per hour.

- |           |            |            |            |
|-----------|------------|------------|------------|
| (a) 45m/s | (b) 15m/s  | (c) 20m/s  | (d) 4m/s   |
| (e) 1m/s  | (f) 0.5m/s | (g) 0.2m/s | (h) 300m/s |

Question 13: Change these speed into kilometres per hour


- |           |           |             |             |
|-----------|-----------|-------------|-------------|
| (a) 10mph | (b) 40mph | (c) 25 mph  | (d) 200mph  |
| (e) 8mph  | (f) 2mph  | (g) 10.5mph | (h) 24.6mph |


Question 14: Change these speed into miles per hour


- |            |              |               |                 |
|------------|--------------|---------------|-----------------|
| (a) 32km/h | (b) 48km/h   | (c) 24km/h    | (d) 800km/h     |
| (e) 16km/h | (f) 0.64km/h | (g) 16000km/h | (h) 2400000km/h |

## Apply

1. A bus travels 222 miles in 6 hours.  
What was the average speed of the bus?


2. Thomas drives 130 miles at an average speed of 40 mph.  
How long does the journey take Thomas?
3. A jumbo jet flies at 484 mph for 4 hours 30 minutes.  
How far does the jet travel?


4. Greg and Kevin both travel between two towns that are 90 miles apart.  
Greg drives and it takes him 1 hour 30 minutes.  
Kevin cycles and it takes him 7 hours 30 minutes.  
Work out the difference between their average speeds?
5. Harry catches the train from Belfast to Dublin at 4pm.  
The average speed of the train is 70mph and the distance from Belfast to Dublin is 105 miles.  
What time does Harry arrive in Dublin?
6. The distance from Sunderland to Wigan is 150 miles.  
Mollie leaves Sunderland in her car at 07:50.  
Her average speed on the journey is 60mph.  
What time does she arrive in Wigan?
7. Jenny drives from Paris to Rochefort, a distance of 483 km  
Her average speed on the journey is 84 km/h.  
She leaves at 9:50pm.  
What time does she arrive in Rochefort?
8. Philip runs at an average speed of 4 m/s.  
How long will it take Philip to complete a 10 kilometre race?  
Give your answer in minutes and seconds.


9. A car travels for 4 hours at an average speed of 45 mph and then 6 hours at an average speed of 35 mph.  
(a) Work out the total distance travelled.  
(b) Work out the average speed for the entire journey.
10. David cycles at 20mph for  $1\frac{1}{4}$  hours, then at 16mph for 2 hours and then 12mph for 45 minutes.  
(a) Work out the total distance travelled.  
(b) Work out the average speed for the entire journey.

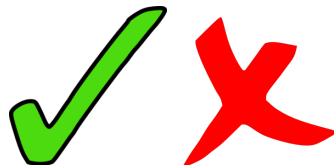
## Speed, Distance, Time

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11. Mr Jenkins catches the 11:45am bus from London to Glasgow.  
The distance between the two cities is 407 miles.  
The bus travels at an average speed of 55mph.  
What time should he arrive in Glasgow?
12. Michael drives 143 miles from town A to town B in 2 hours 36 minutes.  
He then drives from town B to town C at the same speed and it takes 21 minutes.
- (a) Work out Michael's average speed from town A to town B.  
(b) How far did Michael travel, in total, from town A to town C?
13. The distance from Junction 19 to Junction 20 on a motorway is 14 miles.  
Bethany drove the distance in 15 minutes.  
Max drove the distance at a speed of 52mph.  
Who was faster?
14. The distance from Swindon to a village is 40 miles.  
Vicky drives from the village to Swindon at 60 mph.  
Charlie drives from the village to Swindon at 50mph.  
Work out how much longer the journey takes Charlie.  
Give your answer in minutes.
15. Miss Black completes a journey in 3 stages.  
In stage 1, she drives at a speed of 40km/h for 45 minutes.  
In stage 2, she drives at 60 km/h for 2 hours 9 minutes.  
Altogether, over the 3 stages, Miss Black drives 171.6km in 3 hours 15 minutes  
What is her average speed, in km/h, in stage 3?
16. The speed limit on a road is 40mph.  
A scooter drives 9 miles in 13 minutes.  
Is the scooter breaking the speed limit?



Answers



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