

Speed, Velocity and Acceleration

1. A plane flies at a constant speed of 400 mph over a distance of 1250 miles. How long does it take to fly this distance?

2. A car travels at a speed of 70 km/h for 2.5 hours. What distance does it cover?

3. A train travelling at a constant speed covers 340 km in 4 hours 15 minutes. What is its speed in km/h?

4. A rocket travels 500 km in 12 seconds. What is its average speed in m/s?

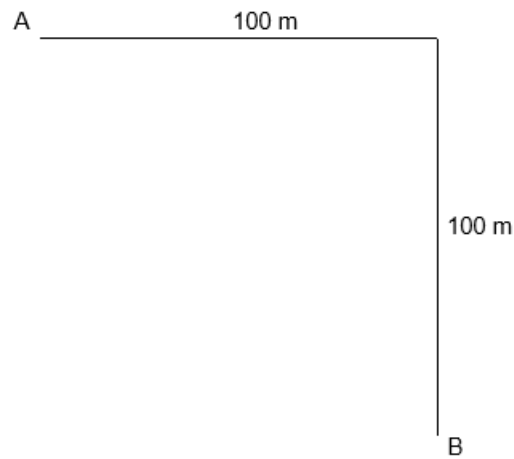
5. A cyclist travels from London to Oxford (a distance of 97 km) at an average speed of 25 km/h. Then, they cycle from Oxford to Stratford-upon-Avon (a distance of 64 km) at an average speed of 16 km/h. What is the total time taken for the entire journey?

6. A train travels from Manchester to Leeds (a distance of 74 km) at an average speed of 80 km/h. After a 15-minute stop in Leeds, it continues to York (a distance of 39 km) at an average speed of 60 km/h. Calculate the average speed of the train for the entire journey from Manchester to York, including the stop.

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7. A runner jogs from their home to the park (a distance of 3 km) at a speed of 6 km/h. They then walk around the park (a distance of 1.5 km) at a speed of 4 km/h. What was the runner's average speed for the entire distance covered?

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8. State what is meant by instantaneous speed and explain how it can be estimated.

9.



Sam walks 100 m due east from point A, then turns and walks a further 100 m due south to reach point B.

- (a) Calculate,
- the total distance sam walked from A to B.
 - the displacement made during the walk.

It took 150 seconds for Sam to go from A to B.

- (b) For Sam's walk, calculate,
- the average speed.
 - the average velocity.

10. A car accelerates from rest to a speed of 20 m/s in 5 seconds. What is its acceleration?

11. A bicycle increases its speed from 2 m/s to 8 m/s in 3 seconds. Calculate its acceleration.

12. A runner starts from rest and accelerates at 2 m/s^2 for 6 seconds. What is their final speed?

13. A car accelerates at a rate of 3 m/s^2 for 4 seconds, reaching a final speed of 25 m/s . What was its initial speed?

14. A train decelerates from a speed of 30 m/s to 10 m/s in 10 seconds. What is its deceleration?

15. A train moving at 40 m/s decelerates at 2 m/s^2 for 5 seconds. What is its final speed?

16. Group the following physical quantities into two groups: Vectors and Scalars

Speed, displacement, velocity, distance, acceleration, time, force, temperature, mass, weight, energy, power.
