

Reading motion graphs and acceleration

Grade 8 science (Year 9 · Class 8) · Test

Name: _____ Date: _____ Class: _____ Mark: ____ / 20

This test has eight questions on distance-time graphs, speed-time graphs and acceleration and is worth 20 marks. Show the formula and the substitution for each calculation and write units with every answer.

Level: Grade 8 science (Year 9 · Class 8) · **Curriculum:** MS-PS2-2

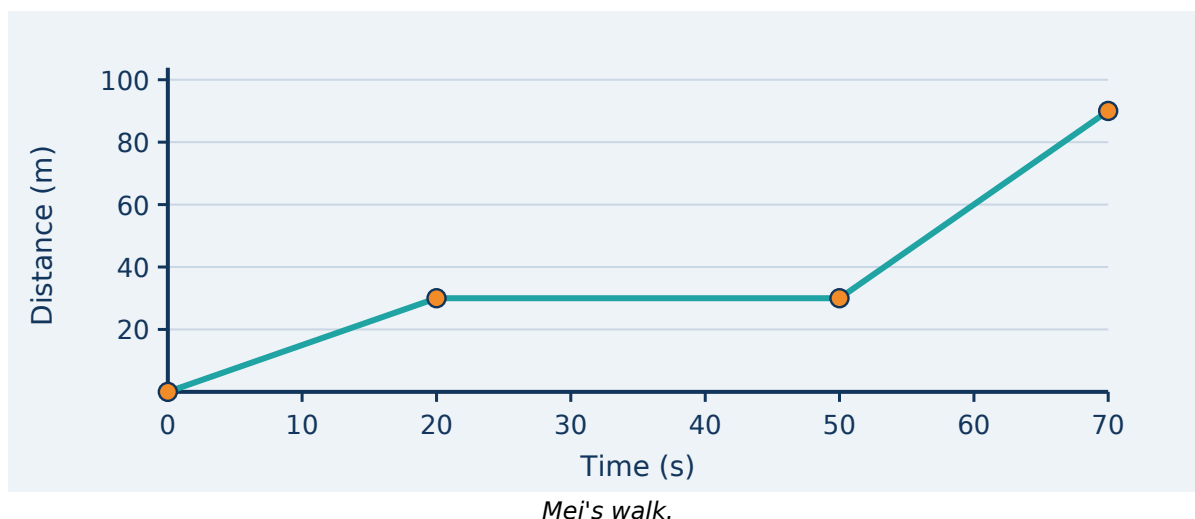
Time: 40 minutes · 8 questions · Total: 20 marks · Calculator allowed

Question 1 Meaning of the gradient (2 marks)

- State what the gradient of a distance-time graph represents. (1 mark)
- State what the gradient of a speed-time graph represents. (1 mark)

Question 2 Mei's walk (4 marks)

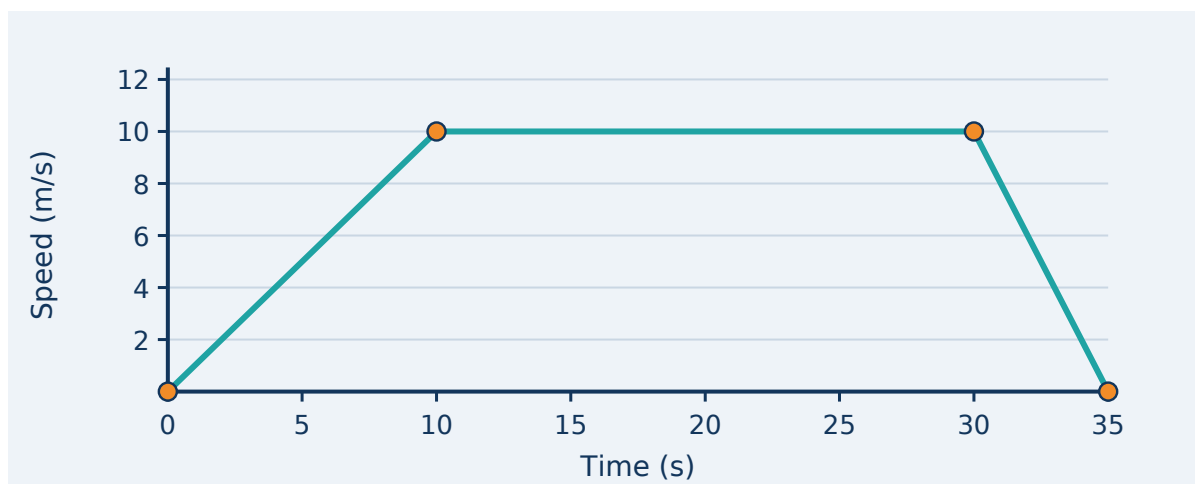
Mei walks along a path. The graph shows her distance from home.



- State her distance from home after 40 s. (1 mark)
- Calculate her speed in the first 20 s. (1 mark)
- State how long she is stationary. (1 mark)
- Calculate her speed in the last 20 s. (1 mark)

Question 3 A lorry journey (4 marks)

The graph shows the speed of a lorry.



A lorry on a straight road.

- Calculate the acceleration in the first 10 s. (1 mark)
- Calculate the deceleration in the last 5 s. (1 mark)
- Calculate the total distance travelled using areas. (2 marks)

Question 4 A cyclist speeds up (2 marks)

A cyclist increases speed from 3.0 m/s to 9.0 m/s in 4.0 s. Calculate the acceleration. (2 marks)

Question 5 Describe the graph (2 marks)

Describe what each graph shows. (2 marks)

- A horizontal line on a speed-time graph.
- A horizontal line on a distance-time graph.

Question 6 Average speed (3 marks)

Chiamaka walks 2.4 km in 20 minutes.

- Convert the distance and time to metres and seconds. (1 mark)
- Calculate the average speed in m/s. (1 mark)
- Convert the speed to km/h. (1 mark)

Question 7 Braking (2 marks)

A car travelling at 25 m/s brakes to rest in 5.0 s. Calculate the deceleration. (2 marks)

Question 8 Speed and velocity (1 mark)

State one difference between speed and velocity. (1 mark)