

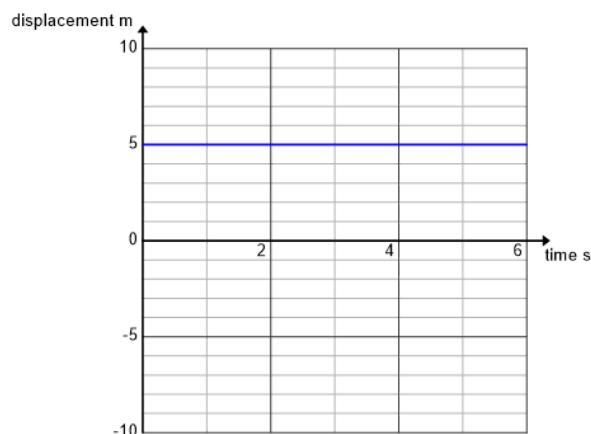
Our Dynamic Universe

Motion Graphs: Displacement Graphs



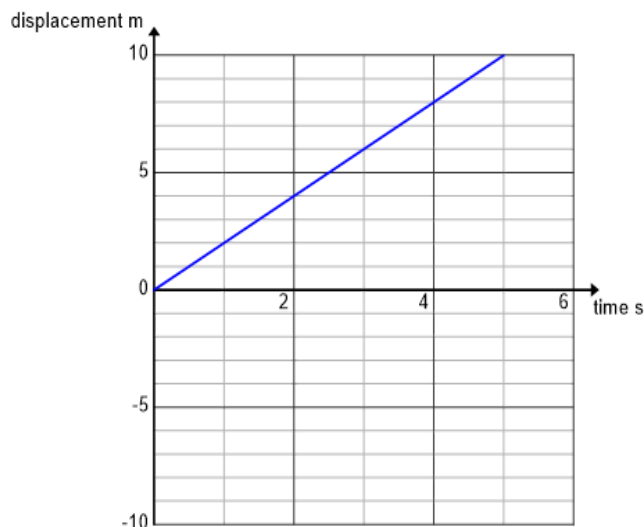
1) The displacement graph of a moving object was collected using a motion sensor.

- State the displacement of the object at 4 seconds.
- How far did the object travel between 2 and 4 seconds?
- Sketch a velocity time graph for the object's motion.



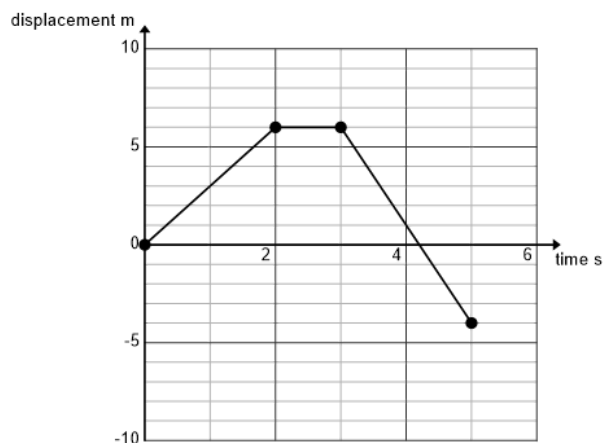
2) The displacement graph was obtained for a moving object.

- State the displacement of the object at 3 s.
- What distance did the object move between 2 s and 4 s?
- State what the gradient of the displacement time graph means.
- Sketch a velocity time graph of the motion and state the velocity of the object.

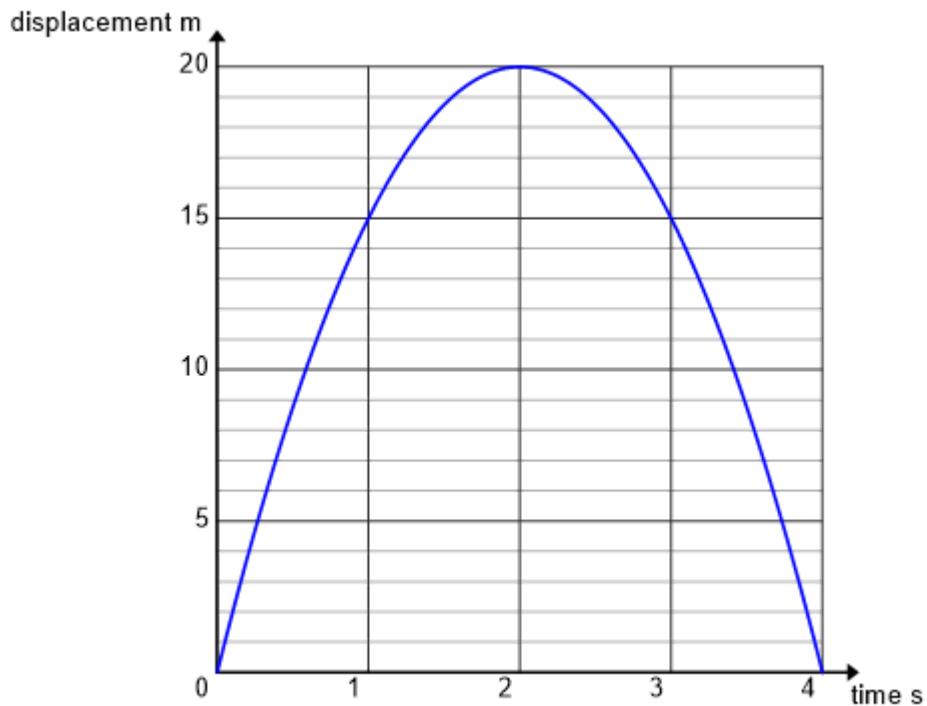


3) A moving object's displacement graph is obtained.

- State the final displacement of the object.
- Determine the average velocity of the journey.
- Find the total distance the object moved upto the time of 5s.



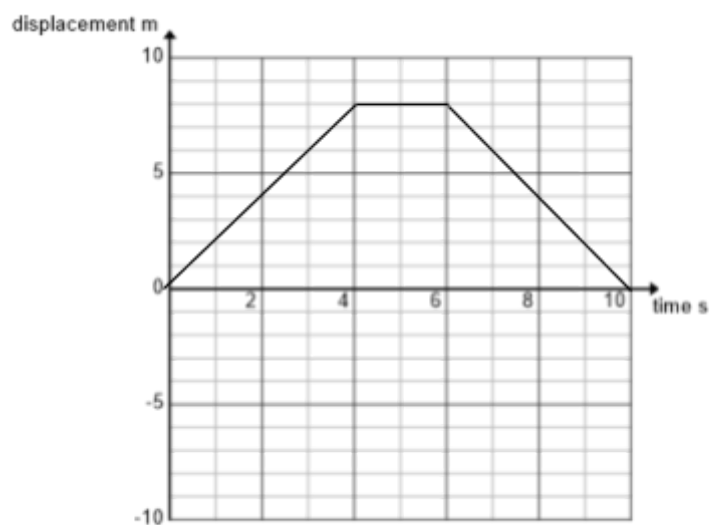
- 4) A motion sensor collects data of an object thrown vertically into the air. The displacement graph is displayed below.



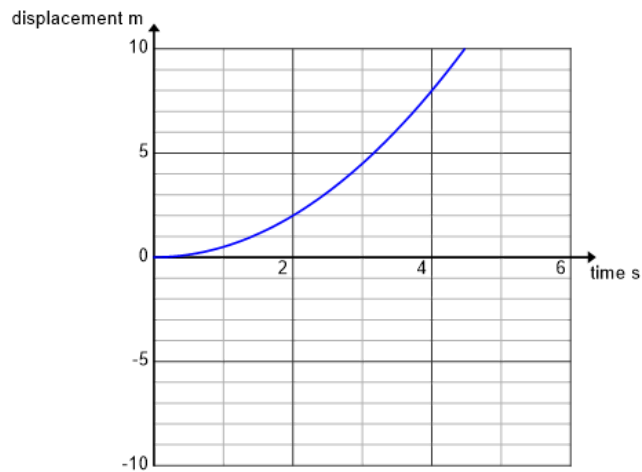
- State the displacement of the object at 4 s
- At what time did the object have the maximum displacement?
- What does the gradient of a displacement graph measure?
- Sketch the velocity time graph of the motion.

- 5) An object's displacement graph is displayed on a laptop screen. The data is collected by a radio link.

- State the final displacement.
- Determine the average velocity of the object at 10 s
- State the average velocity between 4s and 6s.
- Find the average speed of the object.

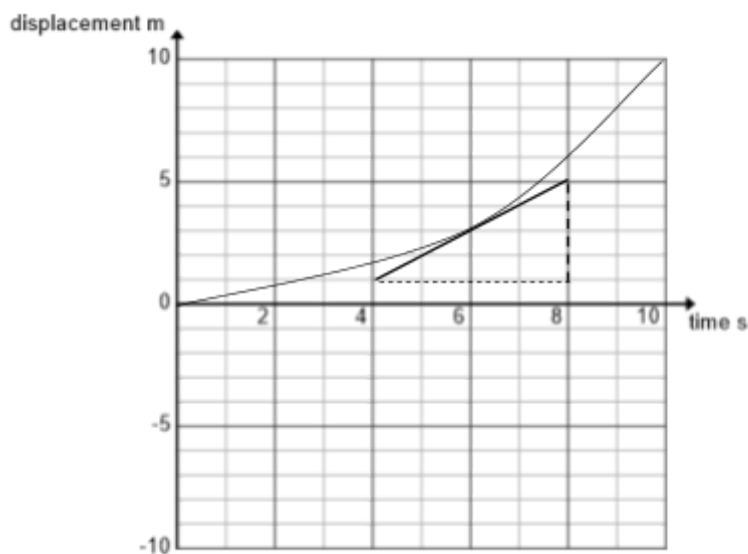


6) The displacement time graph is recorded from a moving object.



- Find the average velocity between 2 s and 4 s.
- Sketch the velocity time graph of this motion. (No quantities are required)
- Sketch the acceleration time graph of the motion.

7) A toy car moves along a school corridor and the displacement time graph is obtained from a motion sensor.



- What quantity does the gradient at a certain point on a displacement time graph give?
- State the displacement of the toy car at a time of 6 seconds.
- Determine the instantaneous velocity of the toy car at 6 seconds.

Solutions and hints

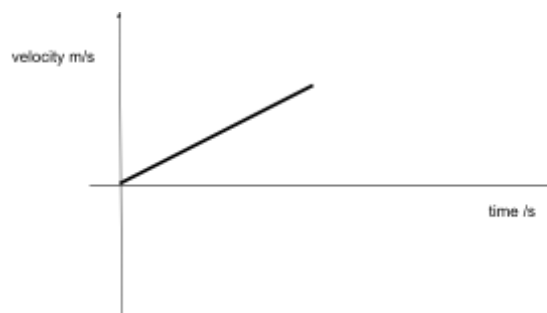
1)

- a) 5 m
- b) 0 m
- c)



2)

- a) 3 m
- b) 4 m
- c) velocity
- d)

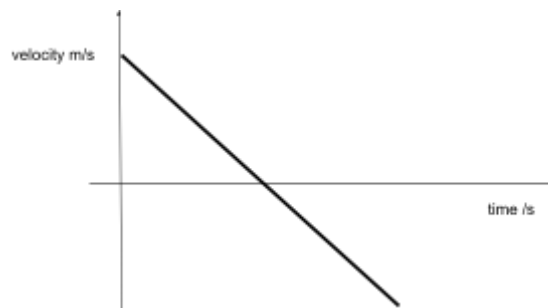


3)

- a) -4 m
- b) -0.8 m/s
- c) 16m

4)

- a) 0 m
- b) 2 s
- c) velocity
- d)

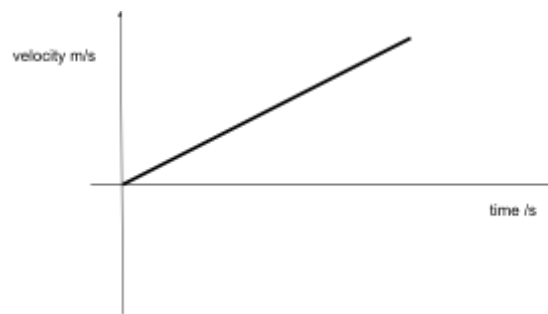


5)

- a) 0 m
- b) 0 m/s
- c) Not moved so average velocity = 0 m/s
- d) Total distance travelled = 8m + 8 m =16 m in 10 s
so average velocity = 1.6 m/s

6)

- a) 3 m/s
- b)



c)

