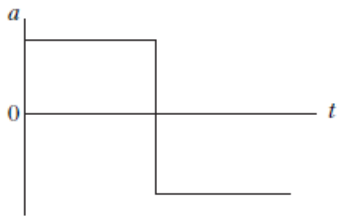
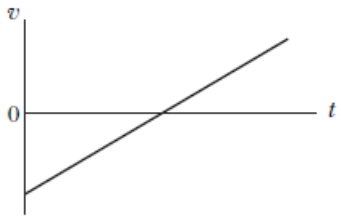
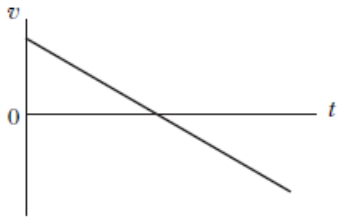
Unit 1 – Our Dynamic Universe
Section 1 - Motion – Graphs of Motion

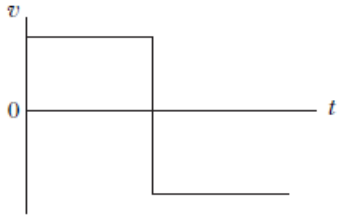
2010 2. The graph shows how the acceleration, a, of an object varies with time, t.

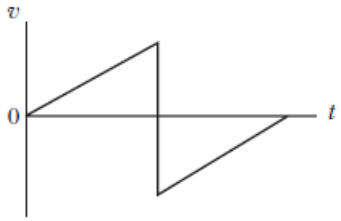


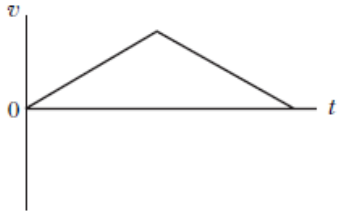
Which graph shows how the velocity, v, of the object varies with time, t?

A


B


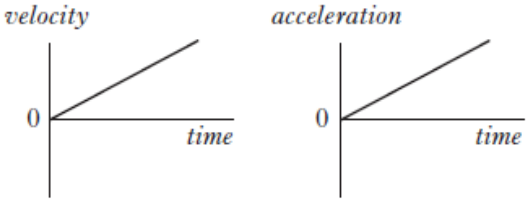
C


D


E


2011 2. A vehicle is travelling in a straight line. Graphs of velocity and acceleration against time are shown.

Which pair of graphs could represent the motion of the vehicle?

A


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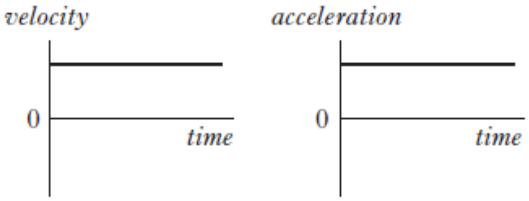

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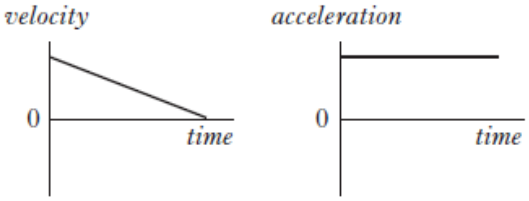
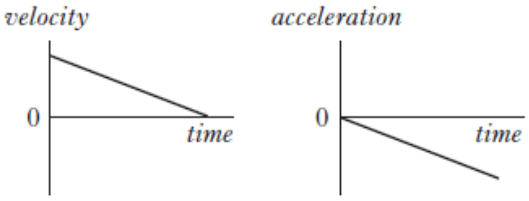
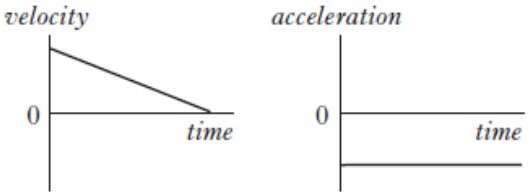
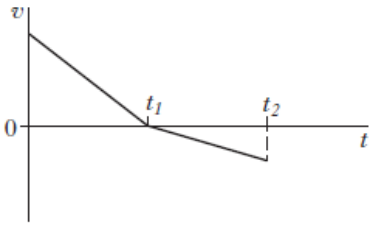


D


E


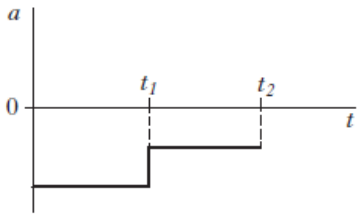
2012 2. A trolley travels along a straight track.

The graph shows how the velocity v of the trolley varies with time t.

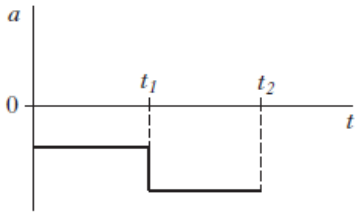


Which graph shows how the acceleration a of the trolley varies with time t?

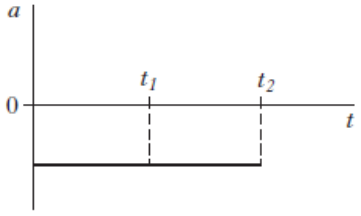
A



B



C



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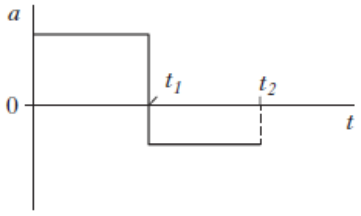
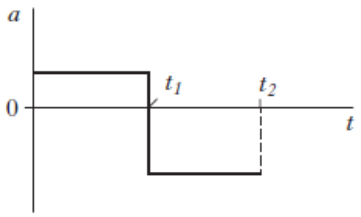
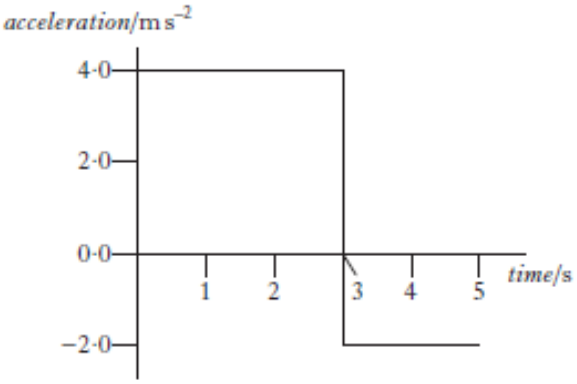


E



2013 2. An object starts from rest and accelerates in a straight line.

The graph shows how the acceleration of the object varies with time.



The speed of the object at 5 seconds is

A $2\,m\,s^{-1}$

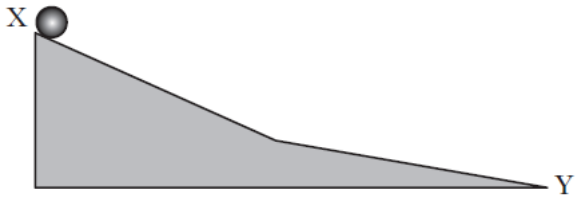
B $8\,m\,s^{-1}$

C $12\,m\,s^{-1}$

D $16\,m\,s^{-1}$

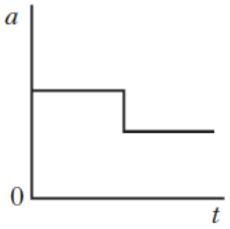
E $20\,m\,s^{-1}$.

2014 **3.** A ball moves down a frictionless slope from X to Y.

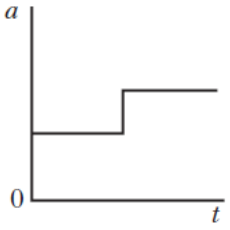


Which graph shows how the acceleration a of the ball varies with time t as it moves down the slope?

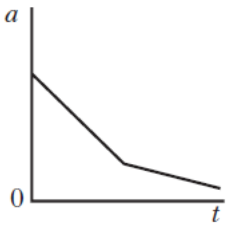
A



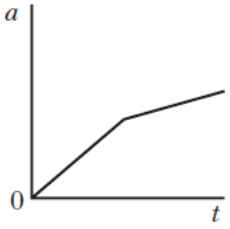
B



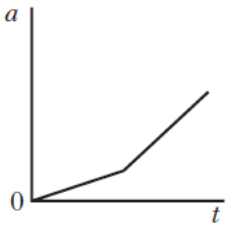
C



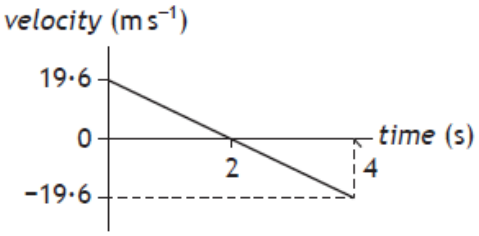
D



E

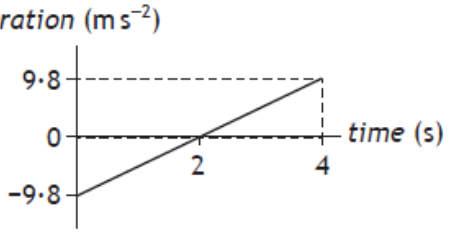


2015 1. The following velocity-time graph represents the vertical motion of a ball.

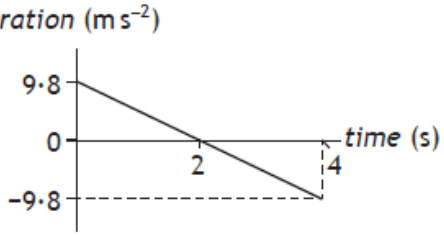


Which of the following acceleration-time graphs represents the same motion?

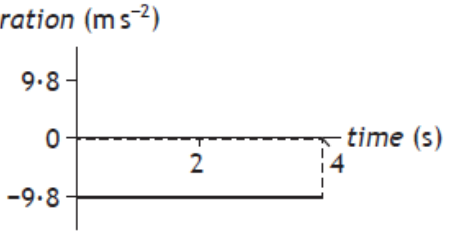
A



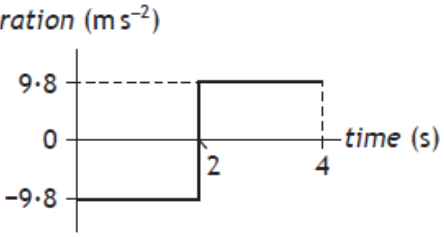
B



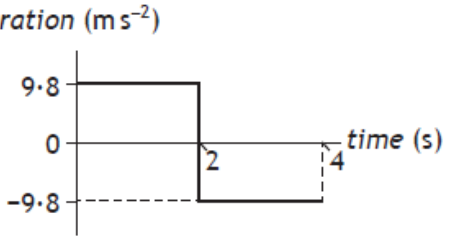
C



D



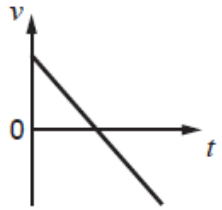
E



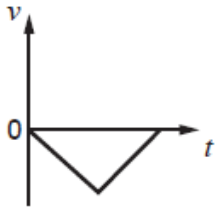
2016 2. A ball is thrown vertically upwards and falls back to Earth.

Neglecting air resistance, which velocity-time graph represents its motion?

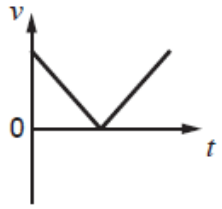
A



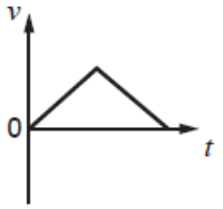
D



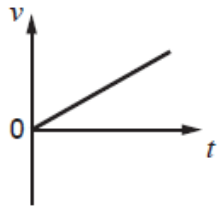
B



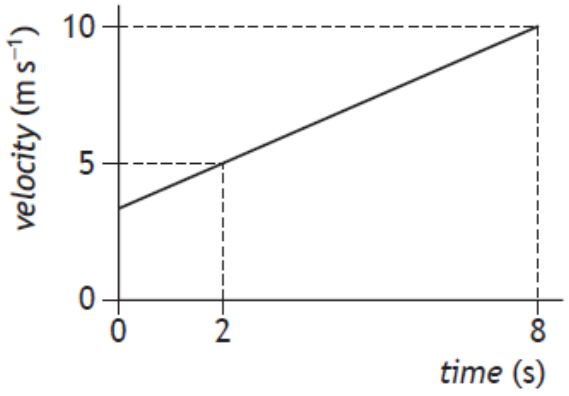
E



C



2017 1. The graph shows how the velocity of an object varies with time.



The acceleration of the object is

A $0{\cdot}83\ m\ s^{-2}$

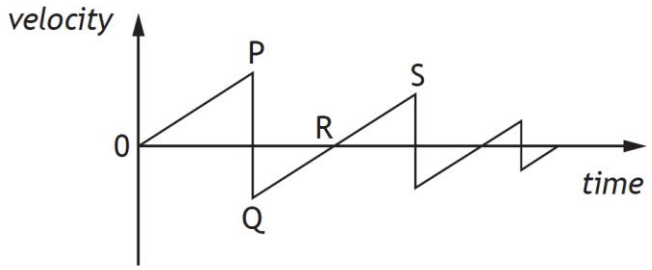
B $1{\cdot}2\ m\ s^{-2}$

C $2{\cdot}5\ m\ s^{-2}$

D $5{\cdot}0\ m\ s^{-2}$

E $6{\cdot}0\ m\ s^{-2}$.

2018 **2.** A ball is dropped from rest and allowed to bounce several times.
The graph shows how the velocity of the ball varies with time.



A student makes the following statements about the ball.

I The ball hits the ground at P.

II The ball is moving upwards between Q and R.

III The ball is moving upwards between R and S.

Which of these statements is/are correct?

A I only

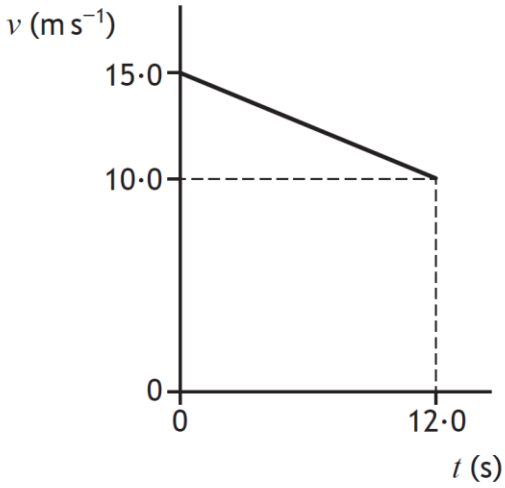
B II only

C III only

D I and II only

E I and III only

2019 **1.** The graph shows how the speed v of a car varies with time t.



The average speed of the car during the 12·0 s is

A $1{\cdot}25\ \text{m s}^{-1}$

B $2{\cdot}08\ \text{m s}^{-1}$

C $2{\cdot}50\ \text{m s}^{-1}$

D $7{\cdot}50\ \text{m s}^{-1}$

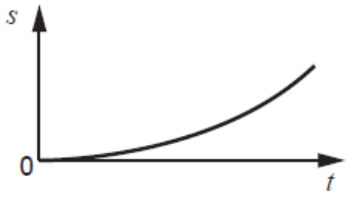
E $12{\cdot}5\ \text{m s}^{-1}$.

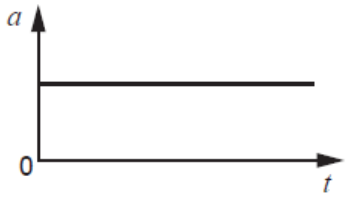
2019 4. A car accelerates from rest along a straight level road.

The acceleration of the car is constant.

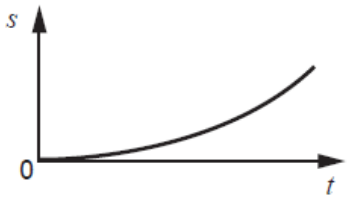
Which pair of displacement-time (s-t) and acceleration-time (a-t) graphs represent the motion of the car?

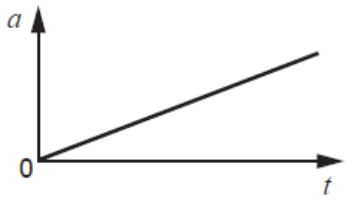
A



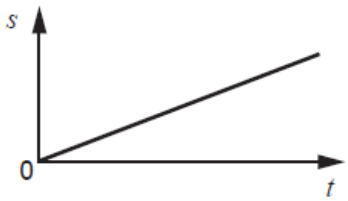


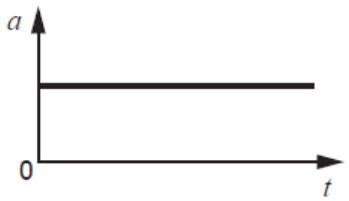
B



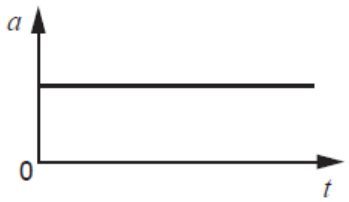


C





D



E