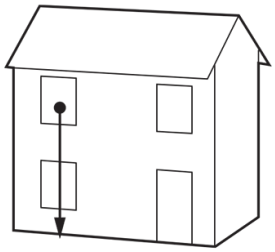
## 1.2 Motion

01. 0625_m22_qp_22 Q: 2

A tennis ball falls from the upstairs window of a house.



What can be said about the acceleration of the ball if air resistance is ignored?

**A** It depends on the density of the ball.

**B** It depends on the mass of the ball.

**C** It increases as the ball falls.

**D** It stays the same as the ball falls.

---

02. 0625_m22_qp_22 Q: 3

A car joins a road at a speed of 14 m/s and accelerates at 4.0 m/s$^2$ for 5.0 seconds.

What is the final speed of the car?

**A** 18 m/s **B** 20 m/s **C** 32 m/s **D** 34 m/s

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03. 0625_m21_qp_22 Q: 2

A ball hits a bat with a velocity of 30 m/s, and leaves the bat travelling with a velocity of 20 m/s in the opposite direction. The ball is in contact with the bat for 0.10 s.

What is the magnitude of the acceleration of the ball whilst it is in contact with the bat?

**A** 1.0 m/s$^2$ **B** 5.0 m/s$^2$ **C** 100 m/s$^2$ **D** 500 m/s$^2$

---

04. 0625_m21_qp_22 Q: 3

A train begins a journey from a station and travels 60 km in a time of 20 minutes.

What is the average speed of the train?

**A** 3.0 m/s **B** 5.0 m/s **C** 50 m/s **D** 60 m/s

---

05. 0625_s21_qp_21 Q: 2

Which row describes speed and velocity?

| | speed | velocity |
|---|---|---|
| **A** | scalar | scalar |
| **B** | scalar | vector |
| **C** | vector | scalar |
| **D** | vector | vector |

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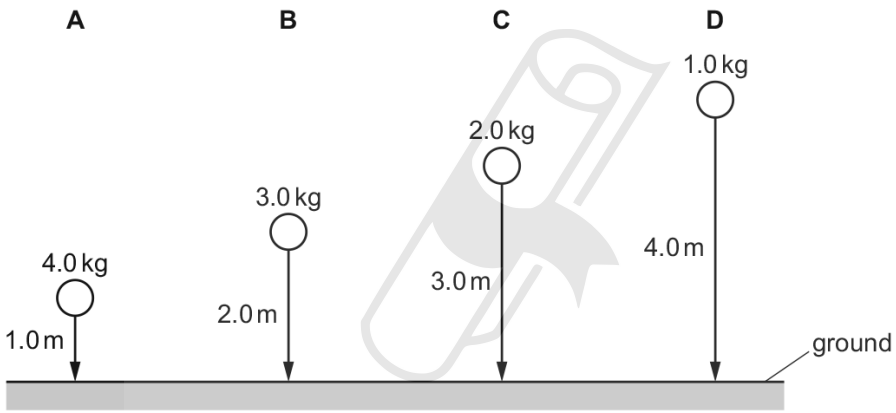
06. 0625_s21_qp_21 Q: 3

Four balls with different masses are dropped from the heights shown.

Air resistance may be ignored.

Which ball has the smallest average speed?

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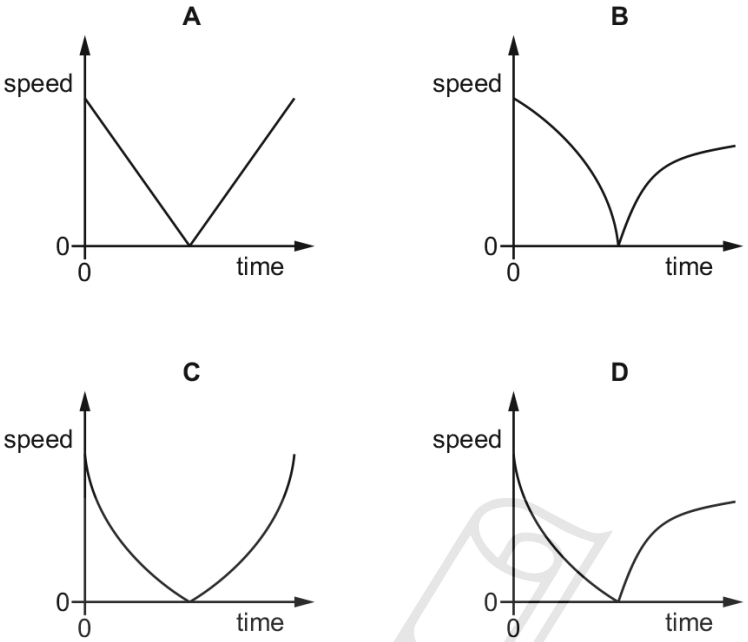
07. 0625_s21_qp_22 Q: 3

A ball is thrown vertically upwards through the air. Air resistance acts on the ball.

Which graph shows how its speed varies with time?

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08. 0625_s21_qp_23 Q: 3

A cyclist rides 300 m up a slope in 50 s.

She then rides down the slope in 25 s.

What is her average speed for the whole journey?

**A** 4.0 m/s **B** 8.0 m/s **C** 9.0 m/s **D** 16 m/s

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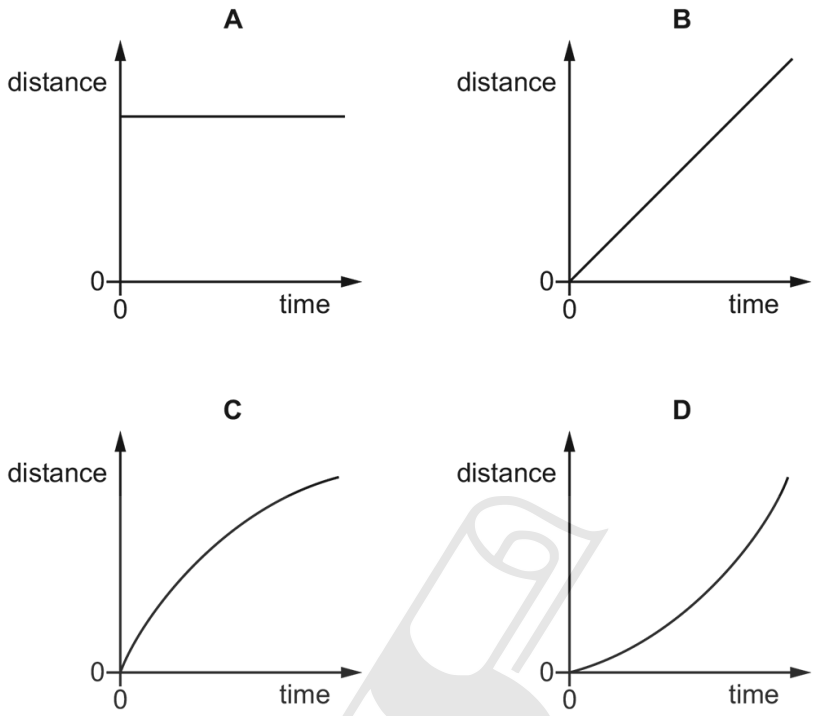
09. 0625_w21_qp_21 Q: 2

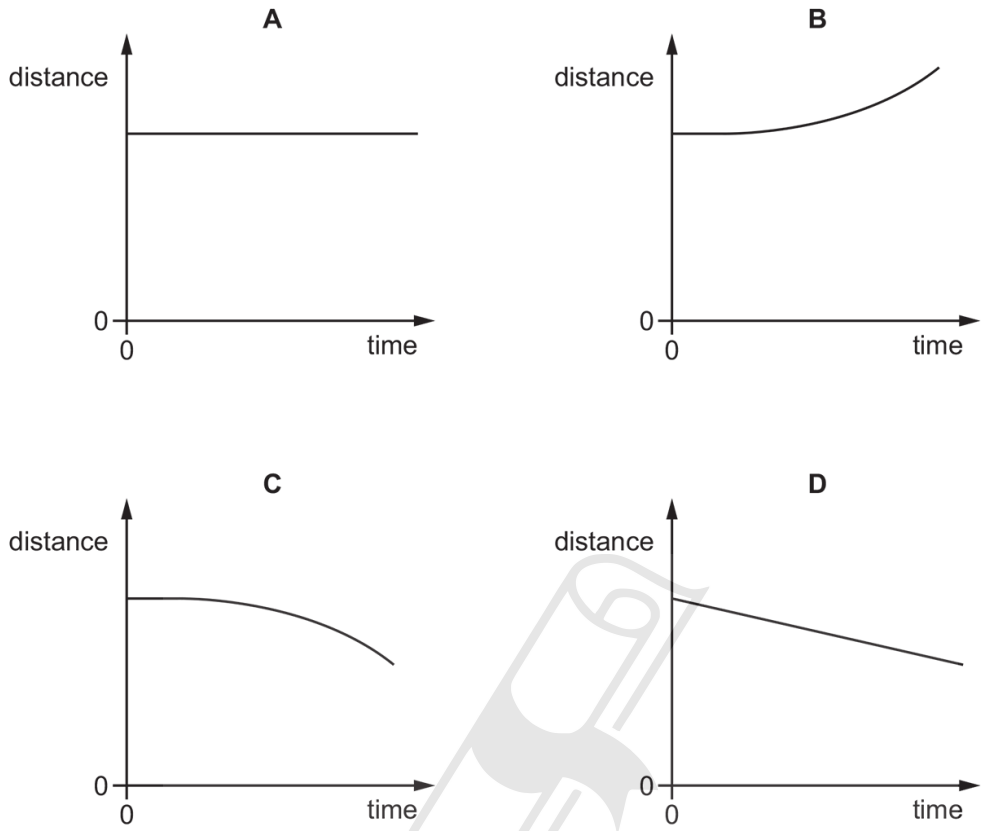
The diagrams show distance–time graphs for four objects.

Which graph represents an object moving with an increasing speed?



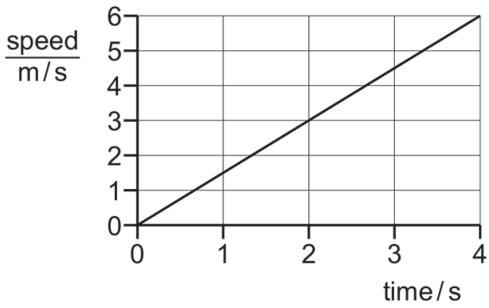
10. 0625_w21_qp_22 Q: 2

Which graph represents an object that is moving at constant speed?



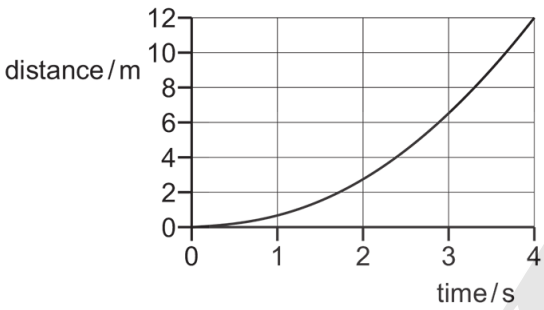
11. 0625_w21_qp_23 Q: 2

The graph shows how the speed of a car varies with time at the start of a journey.

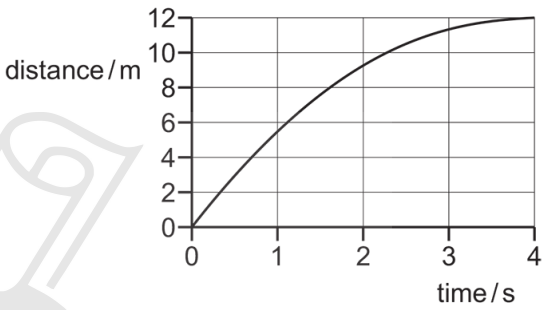



Which distance–time graph represents the motion of the car over the same time period?

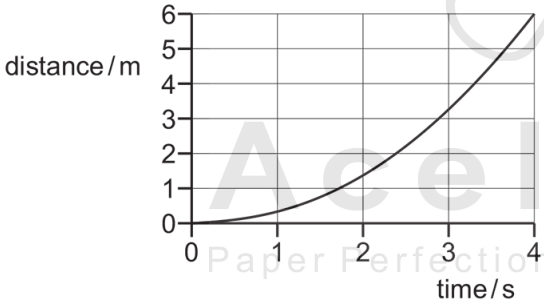
A



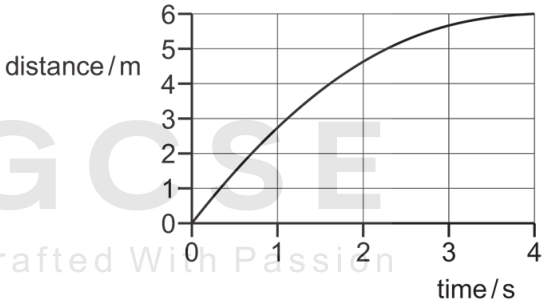

B




C

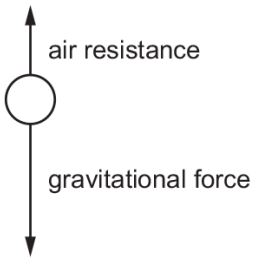



D



12. 0625_m20_qp_22 Q: 2

A ball falls from rest through the air towards the ground. The diagram shows two forces acting on the ball.




As the ball falls, the air resistance increases.

Which statement is correct?

**A** The acceleration of the ball decreases.

**B** The acceleration of the ball increases.

**C** The speed of the ball decreases.

**D** The gravitational force on the ball decreases.

---

13. 0625_m20_qp_22 Q: 3

A compressed spring projects a ball horizontally in a vacuum chamber.

On the Earth, the ball reaches the chamber floor 4.0 m in front of the spring.

An identical experiment is done on the Moon. The gravitational field strength is lower on the Moon than on the Earth.

The experimental results on the Moon are compared with those on the Earth.



Which statement is correct?

**A** The horizontal speed is greater on the Moon and the ball hits the floor 4.0 m in front of the spring.

**B** The horizontal speed is greater on the Moon and the ball hits the floor more than 4.0 m in front of the spring.

**C** The horizontal speed is the same on the Moon and the ball hits the floor 4.0 m in front of the spring.

**D** The horizontal speed is the same on the Moon and the ball hits the floor more than 4.0 m in front of the spring.

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14. 0625_p20_qp_20 Q: 3

A parachutist is falling at terminal velocity, without her parachute open.

She now opens her parachute.

What is the direction of her motion, and what is the direction of her acceleration, immediately after she opens her parachute?

| | direction of motion of the parachutist | direction of acceleration of the parachutist |
|---|---|---|
| **A** | downwards | downwards |
| **B** | downwards | upwards |
| **C** | upwards | downwards |
| **D** | upwards | upwards |

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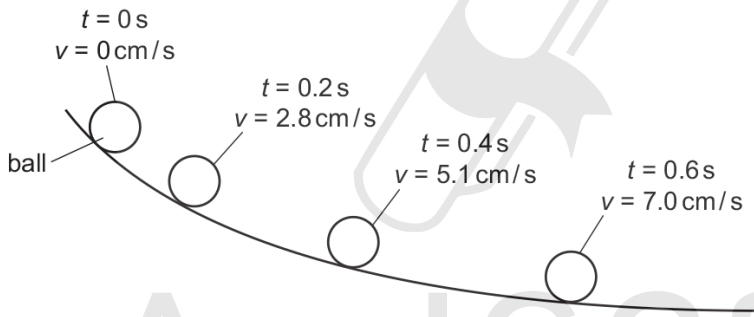
15. 0625_s20_qp_21 Q: 2

A student investigates the motion of a ball rolling down a slope.

The diagram shows the speed $v$ of the ball at different times $t$.




Which statement describes the motion of the ball?

**A** The acceleration is not constant.

**B** The acceleration is negative.

**C** The speed is decreasing.

**D** The velocity is constant.

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16. 0625_s20_qp_21 Q: 3

Which statement about acceleration is correct?

**A** It is related to the changing speed of an object.

**B** It is the distance an object travels in one second.

**C** It is the force acting on an object divided by the distance it travels in one second.

**D** It is the force acting on an object when it is near to the Earth.

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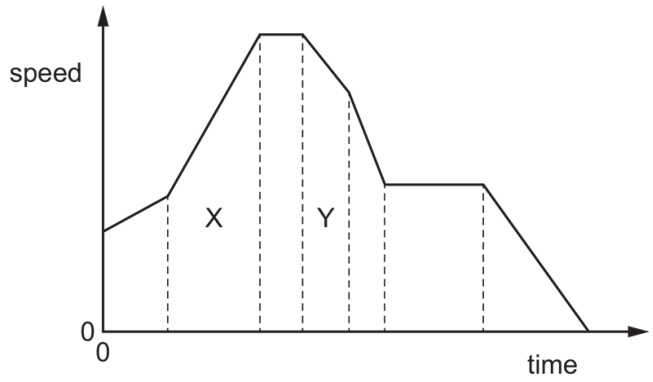
17. 0625_w20_qp_21 Q: 2

The speed–time graph represents a journey.




How does the graph show that the distance travelled in section X of the journey is greater than the distance travelled in section Y?

**A** The area below section X of the graph is greater than the area below section Y.

**B** The gradient of section X of the graph is greater than the gradient of section Y.

**C** The speed at the end of section X of the journey is greater than the speed at the end of section Y.

**D** The time for section X of the journey is greater than the time for section Y.

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18. 0625_w20_qp_21 Q: 3

A car is travelling at a velocity of 2.0 m/s. It accelerates at a constant 0.20 m/s$^2$ for 2.5 minutes.

What is the final velocity of the car?

**A** 2.5 m/s **B** 5.2 m/s **C** 30 m/s **D** 32 m/s

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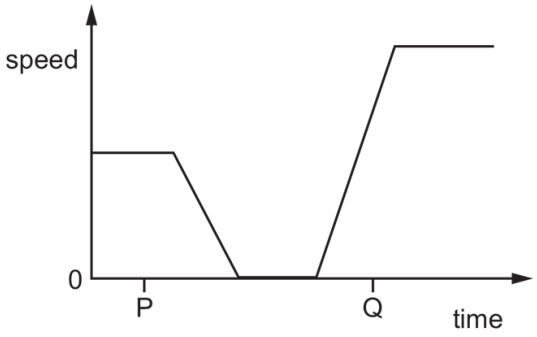
19. 0625_w20_qp_22 Q: 2

The graph shows how the speed of an object varies with time.




Which row describes the motion of the object at times P and Q?

| | P | Q |
|---|---|---|
| **A** | at rest | accelerating |
| **B** | at rest | decelerating |
| **C** | moving with constant speed | accelerating |
| **D** | moving with constant speed | decelerating |

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20. 0625_w20_qp_23 Q: 2

Object P moves at a constant speed of 5 m/s repeatedly backwards and forwards in a straight line.

Object Q moves at a constant speed of 5 m/s vertically downwards.

Object R moves at a constant speed of 5 m/s in a circle.

Which objects are moving with uniform velocity?

**A** P only **B** Q only **C** R only **D** Q and R



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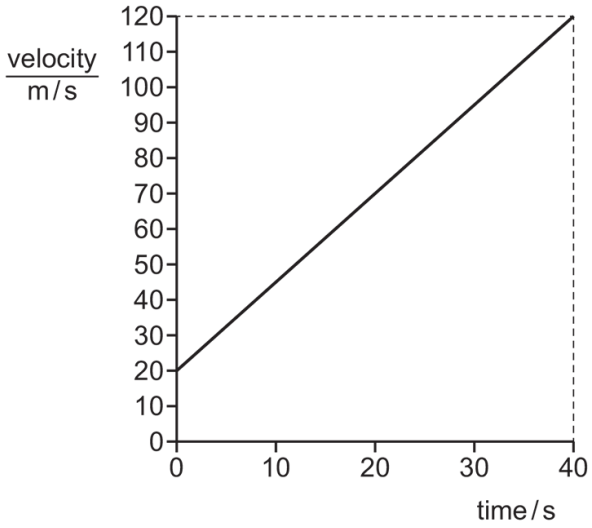
21. 0625_w20_qp_23 Q: 3

The diagram shows a velocity–time graph for an object which is accelerating.




What is the acceleration of the object?

**A** $0.40\,m/s^2$ **B** $2.5\,m/s^2$ **C** $3.0\,m/s^2$ **D** $100\,m/s^2$

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22. 0625_m19_qp_22 Q: 2

An object is moving with uniform deceleration.

Which statement describes its motion?

**A** Its rate of change of speed is decreasing.

**B** Its speed is constant.

**C** Its speed is decreasing.

**D** Its speed is increasing.



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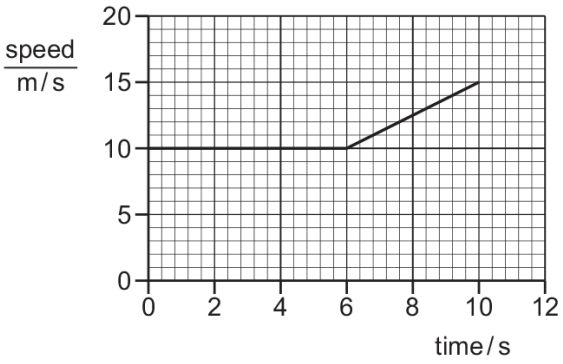
23. 0625_m19_qp_22 Q: 3

The graph shows how the speed of a car varies during part of its journey.




What is the value of the car's acceleration between 6 s and 10 s?

**A** 0.50 m/s$^2$ **B** 0.80 m/s$^2$ **C** 1.25 m/s$^2$ **D** 1.50 m/s$^2$

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24. 0625_s19_qp_21 Q: 2

The velocity of an object increases from 30 m/s to 50 m/s in 5.0 seconds.

What is the average acceleration of the object?

**A** 0.10 m/s$^2$ **B** 0.25 m/s$^2$ **C** 4.0 m/s$^2$ **D** 10 m/s$^2$

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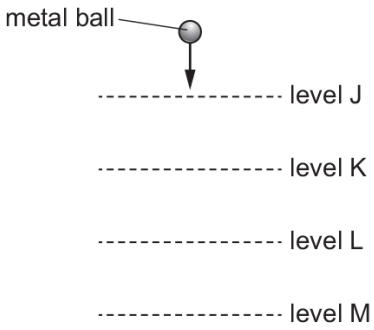
25. 0625_s19_qp_21 Q: 3

A heavy metal ball falls vertically downwards through air past four equally spaced levels J, K, L and M.




The times taken to fall from one level to the next are measured.

Where is the speed of the ball greatest and which time is shortest?

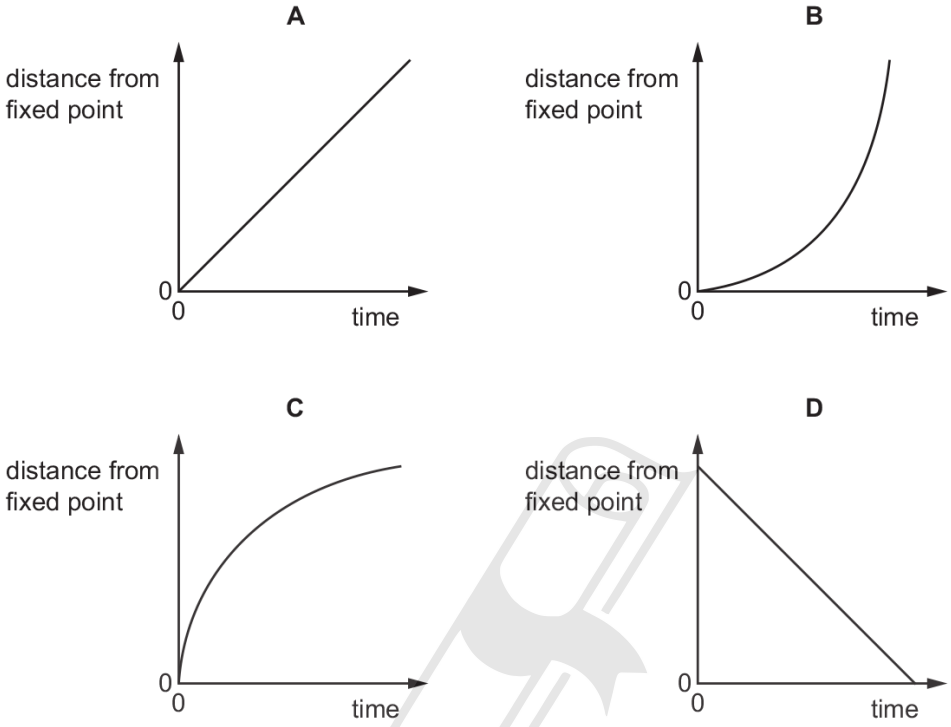
| | speed is greatest between | time is shortest between |
|---|---|---|
| **A** | J and K | J and K |
| **B** | J and K | L and M |
| **C** | L and M | J and K |
| **D** | L and M | L and M |

26. 0625_s19_qp_22 Q: 2

Four objects are moving along a straight line.

The distance of an object from a fixed point on the line is plotted against time for each object.

Which object is decelerating?

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27. 0625_s19_qp_23 Q: 2

A brass ball and a feather are released at the same time.

On Earth, the ball reaches the ground first.

On the Moon, they reach the ground at the same time.

What is the explanation for this?

**A** Both weigh the same on the Moon.

**B** Both weigh less on the Moon.

**C** There is a greater air resistance on the Moon.

**D** There is no air resistance on the Moon.

---

28. 0625_w19_qp_21 Q: 2

A light object is dropped from rest. It falls a large distance vertically through air.

How can the motion of the object be described?

**A** constant acceleration

**B** increasing acceleration

**C** decreasing acceleration and then moving at terminal velocity

**D** increasing acceleration and then moving at terminal velocity

---

29. 0625_w19_qp_21 Q: 3

A car travels at an average speed of 60 km / h for 15 minutes.

How far does the car travel in 15 minutes?

**A** 4.0 km **B** 15 km **C** 240 km **D** 900 km

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30. 0625_w19_qp_22 Q: 3

A car travels at an average speed of 60 km / h for 15 minutes.

How far does the car travel in 15 minutes?

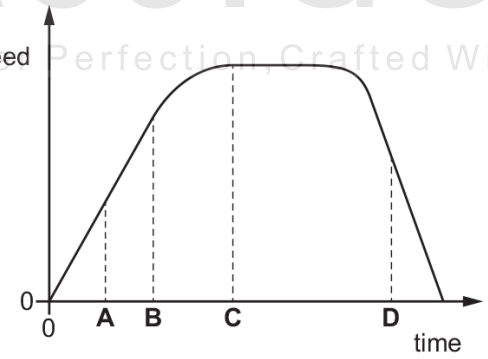
**A** 4.0 km **B** 15 km **C** 240 km **D** 900 km

---

31. 0625_w19_qp_23 Q: 2

The graph shows how the speed of an object varies with time.

At which labelled time is the object decelerating?

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32. 0625_m18_qp_22 Q: 2

A parachutist is falling through the air at terminal velocity.

Which statement about the parachutist is correct?

**A** Every force acting on the parachutist is equal to zero and his acceleration is equal to zero.

**B** Every force acting on the parachutist is equal to zero and his velocity is equal to zero.

**C** The resultant force acting on the parachutist is equal to zero and his acceleration is equal to zero.

**D** The resultant force acting on the parachutist is equal to zero and his velocity is equal to zero.

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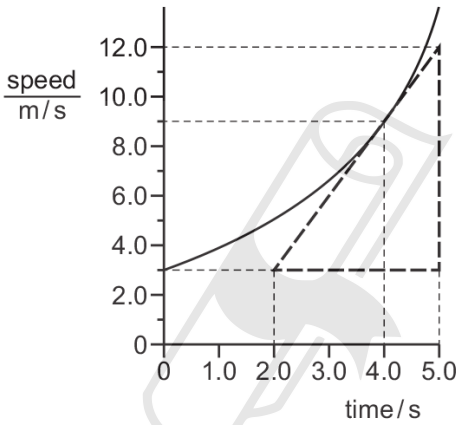
33. 0625_m18_qp_22 Q: 3

The curved line on the graph shows the motion of a car.




What is the acceleration of the car at the time of 4.0 s?

**A** 0.33 m/s$^2$ **B** 0.44 m/s$^2$ **C** 2.3 m/s$^2$ **D** 3.0 m/s$^2$



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34. 0625_s18_qp_21 Q: 2

When does an object falling vertically through the air reach terminal velocity?

**A** when the acceleration of the object becomes negative

**B** when the acceleration of the object is equal to *g*

**C** when the air resistance equals the weight of the object

**D** when the air resistance is greater than the weight of the object

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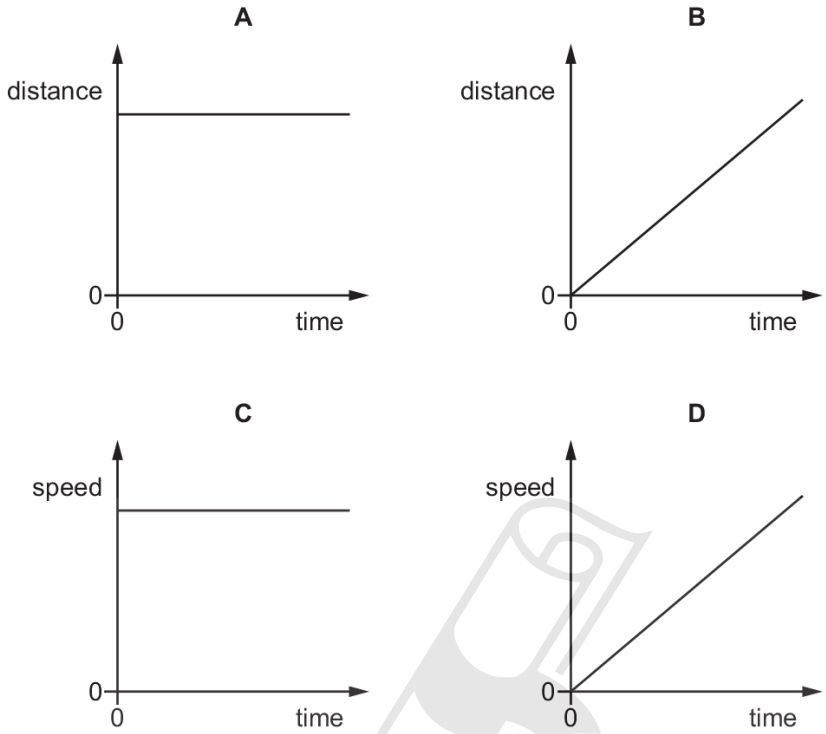
35. 0625_s18_qp_21 Q: 3

A car is moving along a straight, level road, with a constant acceleration.

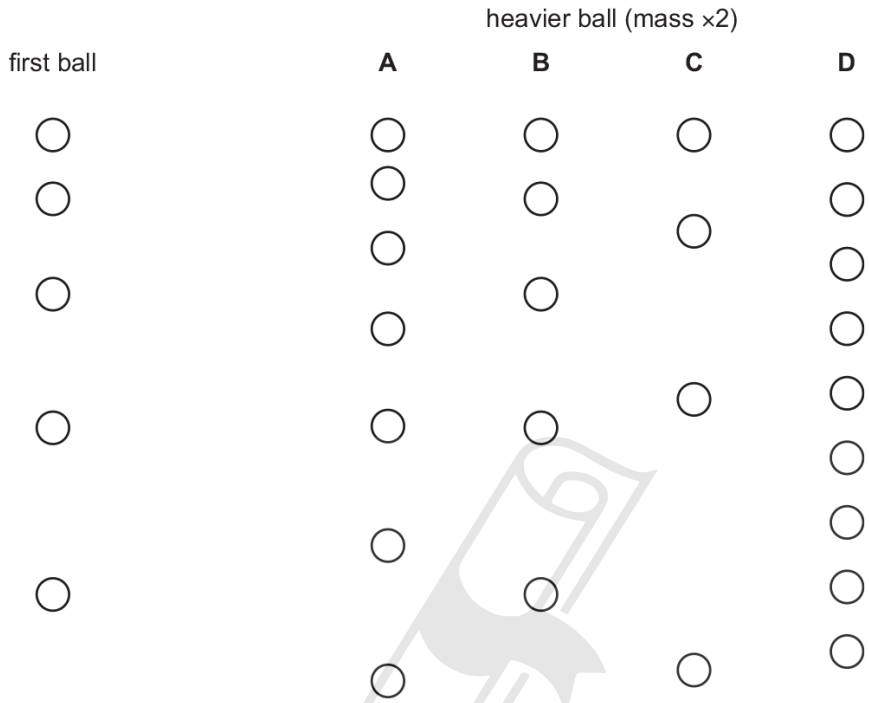
Which graph shows the motion of the car?



36. 0625_s18_qp_22 Q: 3

A ball is dropped in an evacuated tube. A series of photographs is taken at equal time intervals from the time of release. Another ball of the same size but twice the mass is also dropped in the same evacuated tube and photographed.

Which diagram shows the motion of the heavier ball?

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37. 0625_s18_qp_23 Q: 3

A sprinter runs a 100 m race in a straight line. The table shows how his speed changes with time for the first 5.0 s of the race.

| speed / m/s | 0 | 1.7 | 4.1 | 5.7 | 6.5 | 6.8 |
|---|---|---|---|---|---|---|
| time / s | 0 | 1.0 | 2.0 | 3.0 | 4.0 | 5.0 |

What is the average acceleration of the sprinter between time 2.0 s and time 3.0 s?

**A** 1.6 m/s$^2$ **B** 1.9 m/s$^2$ **C** 4.1 m/s$^2$ **D** 5.7 m/s$^2$

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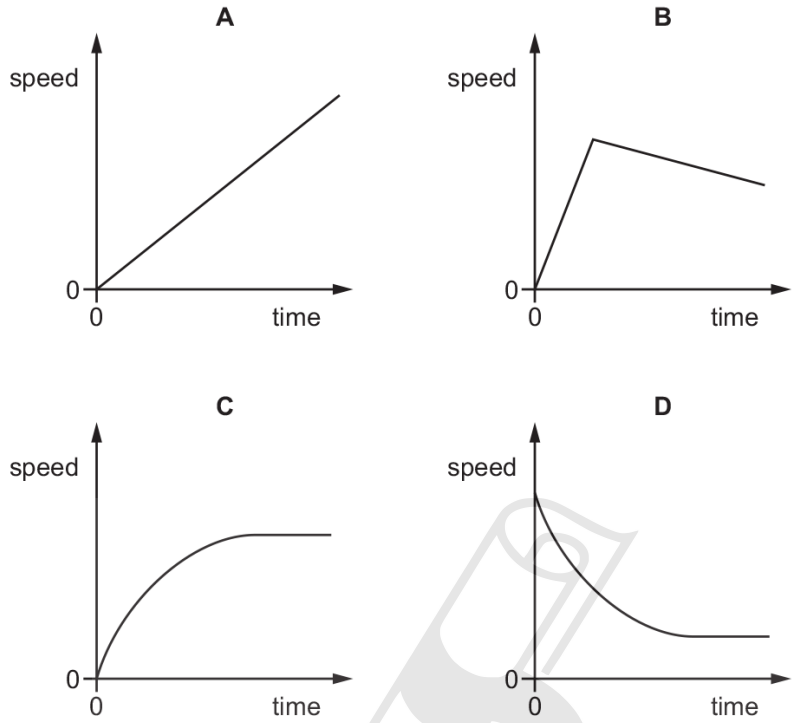
38. 0625_w18_qp_21 Q: 2

A small, light ball is dropped from the top of a tall building.

Which graph shows how the speed of the ball changes with time?

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39. 0625_w18_qp_21 Q: 3

A runner runs 300 m at an average speed of 3.0 m/s. She then runs another 300 m at an average speed of 6.0 m/s.

What is her average speed for the total distance of 600 m?

**A** 2.0 m/s **B** 4.0 m/s **C** 4.5 m/s **D** 8.0 m/s



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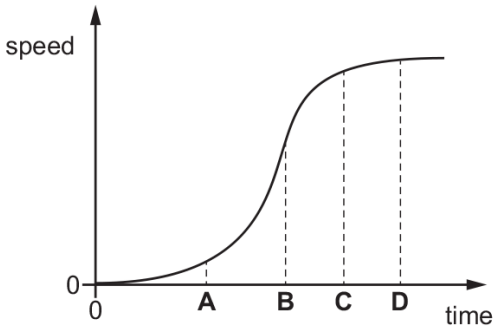
40. 0625_w18_qp_22 Q: 2

The speed-time graph shows the motion of a car.

At which time is its acceleration greatest?

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41. 0625_w18_qp_22 Q: 3

An athlete runs at a speed of 8 m/s for 10 s, and then at a speed of 6 m/s for 12 s.

Which calculation gives the average speed of the athlete in m/s?

**A** $\frac{8+6}{2}$

**B** $\frac{(8\times10)+(6\times12)}{22}$

**C** $\frac{(8\div10)+(6\div12)}{22}$

**D** $\frac{(10\div8)+(12\div6)}{22}$

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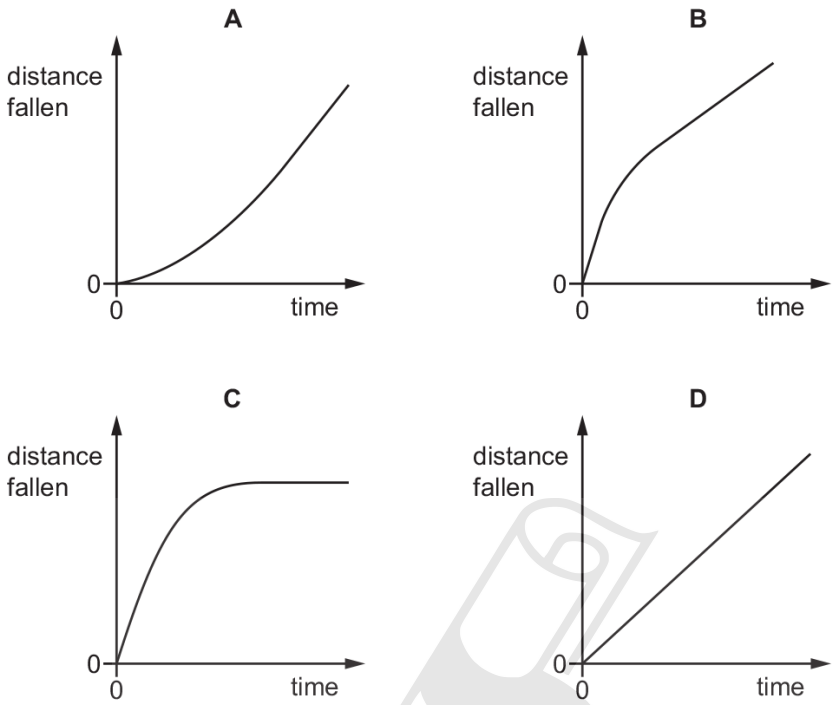
42. 0625_w18_qp_23 Q: 2

An object falls in a gravitational field with air resistance.

Which distance-time graph shows this motion?

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43. 0625_w18_qp_23 Q: 3

A boy runs 400 m at an average speed of 4.0 m/s.

He runs the first 200 m in 40 s.

How long does he take to run the second 200 m?

**A** 60 s **B** 66.7 s **C** 80 s **D** 140 s



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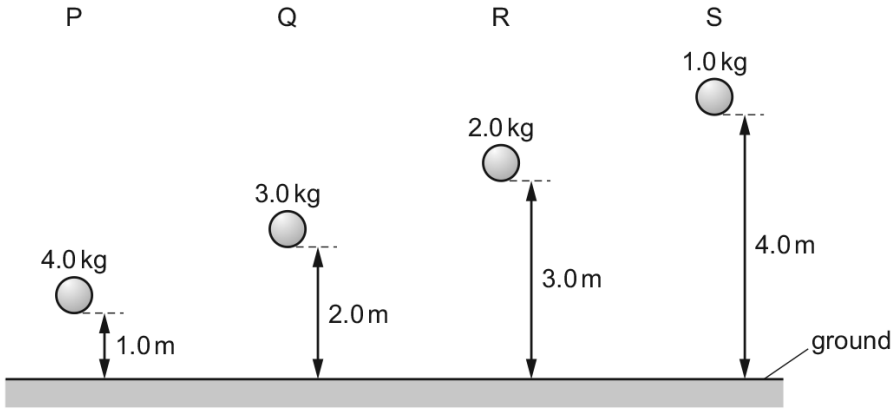
44. 0625_m17_qp_22 Q: 2

Four balls with different masses are dropped from the heights shown.




Air resistance may be ignored.

Which statement about the balls is correct?

**A** Ball P has the greatest acceleration.

**B** Balls Q and R take the same time to fall to the ground.

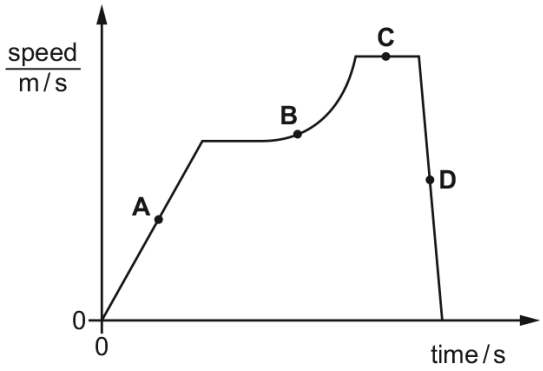
**C** The acceleration of ball R is half the acceleration of ball P.

**D** Ball S has the greatest average speed.

45. 0625_m17_qp_22 Q: 3

An object is travelling in a straight line. The diagram is the speed-time graph for the object.

At which labelled point is the object accelerating at a changing rate?

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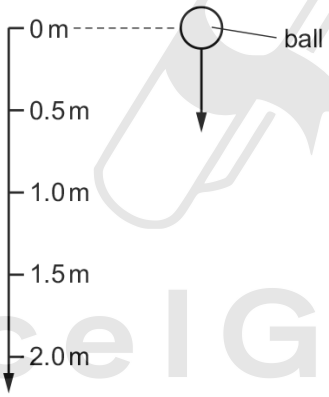
46. 0625_s17_qp_21 Q: 2

On Earth, a ball is dropped and falls 2.0 m in a vacuum.

The acceleration of the ball at 1.0 m is 10 m/s$^2$.






What is the acceleration of the ball at 0.5 m?

**A** 5.0 m/s$^2$ **B** 10 m/s$^2$ **C** 15 m/s$^2$ **D** 20 m/s$^2$

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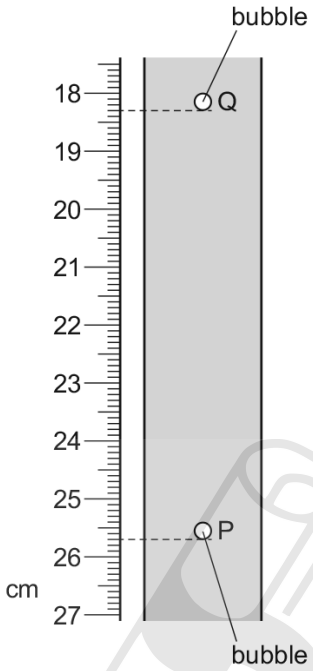
47. 0625_s17_qp_22 Q: 2

A student determines the average speed of a bubble rising through a liquid at constant speed.

When the student starts the stopwatch the bubble is at position P.

After 2.0 s the bubble is at position Q.

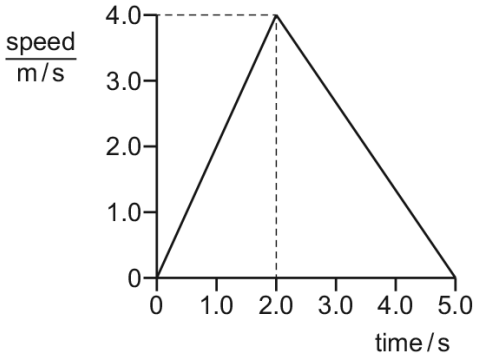



What is the speed of the bubble between P and Q?

**A** 3.2 cm/s **B** 3.7 cm/s **C** 6.4 cm/s **D** 7.4 cm/s

48. 0625_s17_qp_22 Q: 3

The diagram shows the speed-time graph for a toy car travelling in a straight line.



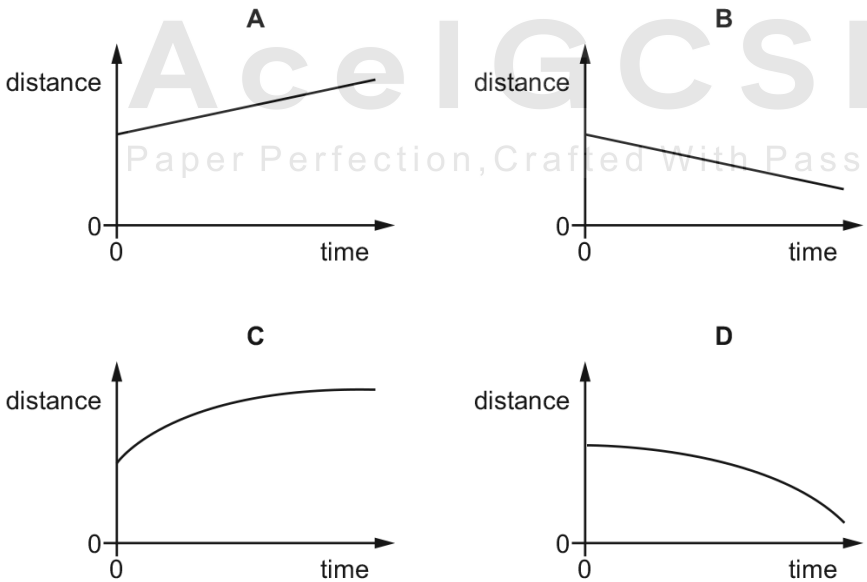

What is the acceleration of the car during the first two seconds and what is the total distance that it travels?

| | acceleration / m/s$^2$ | total distance / m |
|---|---|---|
| **A** | 0.50 | 10 |
| **B** | 0.50 | 20 |
| **C** | 2.0 | 10 |
| **D** | 2.0 | 20 |

---

49. 0625_s17_qp_23 Q: 3

Which distance-time graph represents a body whose speed is decreasing?



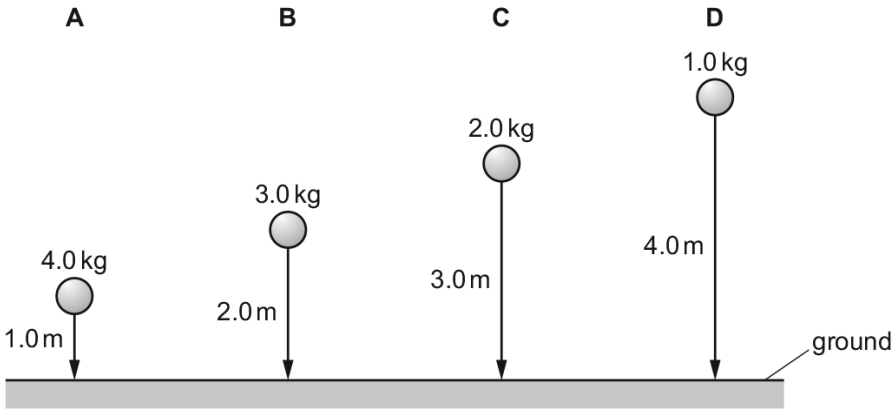

---

50. 0625_w17_qp_21 Q: 2

Four balls with different masses are dropped from the heights shown.

Air resistance may be ignored.

Which ball has the smallest average speed?




---

51. 0625_w17_qp_21 Q: 3

An ice crystal falls vertically from a cloud.

What happens to the acceleration of the ice crystal as it falls?

**A** It decreases because of air resistance.

**B** It decreases because of gravity.

**C** It increases because of air resistance.

**D** It increases because of gravity.

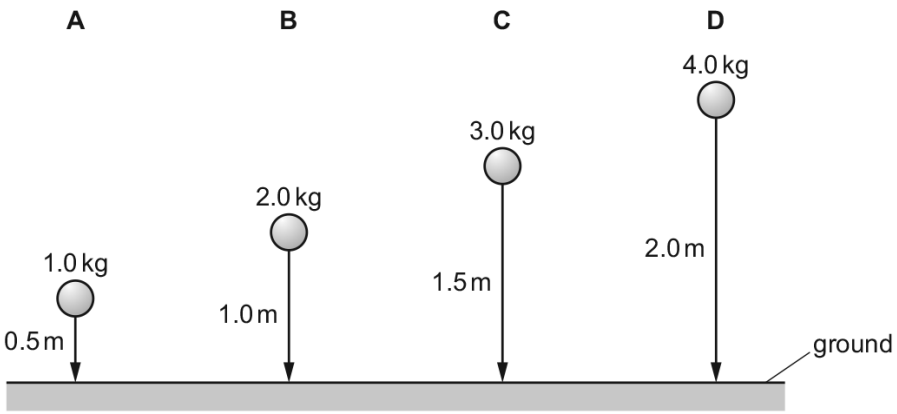
---

52. 0625_w17_qp_22 Q: 2

Four balls with different masses are dropped simultaneously from the heights shown.

Air resistance may be ignored.

Which ball hits the floor last?




---

53. 0625_m16_qp_22 Q: 2

Which is a unit of acceleration?

**A** $g/cm^3$ **B** $m/s$ **C** $m/s^2$ **D** $N/m$

---

54. 0625_m16_qp_22 Q: 3

An object is released from rest and falls to Earth. During its fall, the object is affected by air resistance. The air resistance eventually reaches a constant value.

Which description about successive stages of the motion of the object is correct?

**A** constant acceleration, then constant deceleration

**B** constant deceleration, then zero acceleration

**C** decreasing acceleration, then constant deceleration

**D** decreasing acceleration, then zero acceleration

---

55. 0625_p16_qp_20 Q: 3

A parachutist is falling at terminal velocity, without her parachute open.

She now opens her parachute.

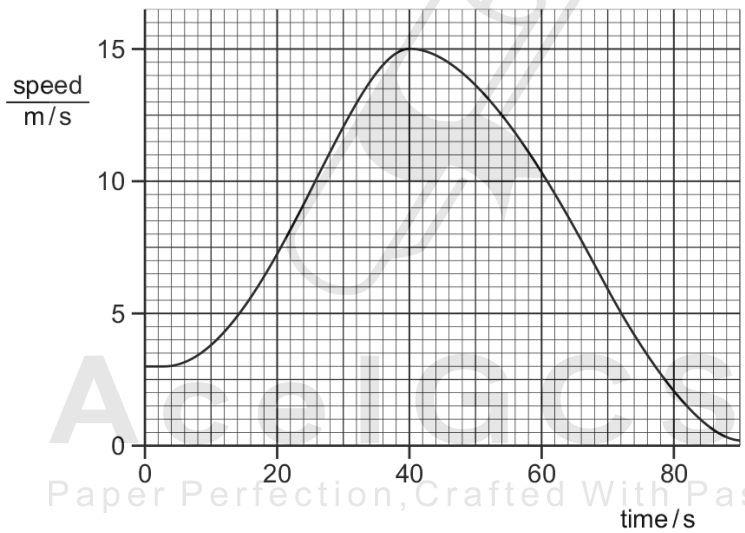
What is the direction of her motion, and what is the direction of her acceleration, immediately after she opens her parachute?

| | direction of motion of the parachutist | direction of acceleration of the parachutist |
|---|---|---|
| **A** | downwards | downwards |
| **B** | downwards | upwards |
| **C** | upwards | downwards |
| **D** | upwards | upwards |

---

56. 0625_s16_qp_21 Q: 2

The speed-time graph shown is for a car moving in a straight line.






What is the acceleration of the car when the time is 40 s?

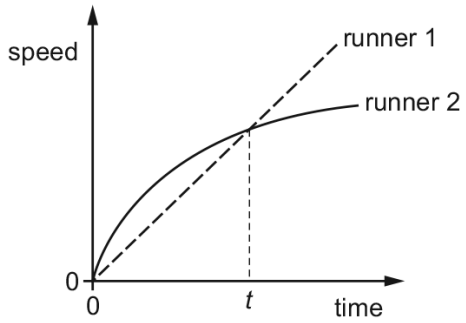
**A** $0\,m/s^2$ **B** $\frac{15-3}{40}\,m/s^2$ **C** $\frac{15}{40}\,m/s^2$ **D** $(15-3)\,m/s^2$

---

57. 0625_s16_qp_21 Q: 3

Two runners take part in a race.

The graph shows how the speed of each runner changes with time.




What does the graph show about the runners at time *t*?

**A** Both runners are moving at the same speed.

**B** Runner 1 has zero acceleration.

**C** Runner 1 is overtaking runner 2.

**D** Runner 2 is slowing down.

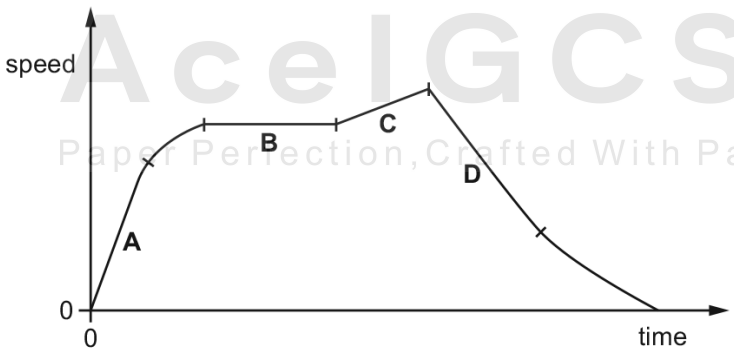
---

58. 0625_s16_qp_22 Q: 2

A car travels along a straight road.

The speed-time graph for this journey is shown.

During which labelled part of the journey is the resultant force on the car zero?






---

59. 0625_s16_qp_22 Q: 3

A large stone is dropped from a bridge into a river. Air resistance can be ignored.

Which row describes the acceleration and the speed of the stone as it falls?

| | acceleration of the stone | speed of the stone |
|---|---|---|
| **A** | constant | constant |
| **B** | constant | increasing |
| **C** | increasing | constant |
| **D** | increasing | increasing |

---

60. 0625_s16_qp_22 Q: 5

Below are four statements about acceleration.

Which statement is **not** correct?

**A** Acceleration always involves changing speed.

**B** Changing direction always involves acceleration.

**C** Changing speed always involves acceleration.

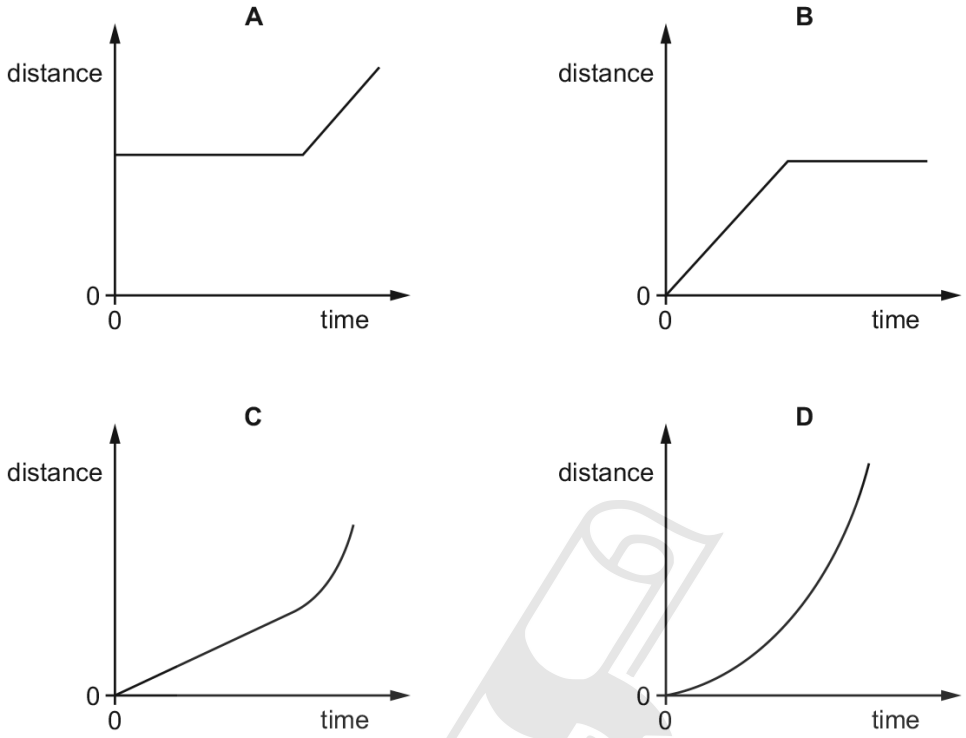
**D** Circular motion always involves acceleration.

---

61. 0625_s16_qp_23 Q: 2

An object moves at a constant speed for some time, then begins to accelerate.

Which distance-time graph shows this motion?




---

62. 0625_s16_qp_23 Q: 3

A heavy object is released near the surface of the Earth and falls freely. Air resistance can be ignored.

Which statement about the acceleration of the object due to gravity is correct?

**A** The acceleration depends on the mass of the object.

**B** The acceleration depends on the volume of the object.

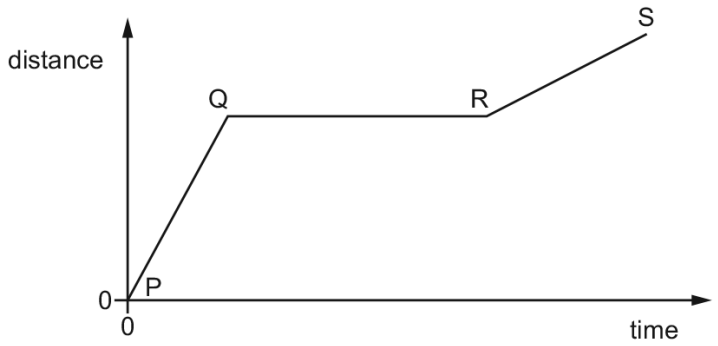
**C** The acceleration is constant.

**D** The acceleration is initially zero and increases as the object falls.

---

63. 0625_w16_qp_21 Q: 1

The graph shows how the distance travelled by a vehicle changes with time.



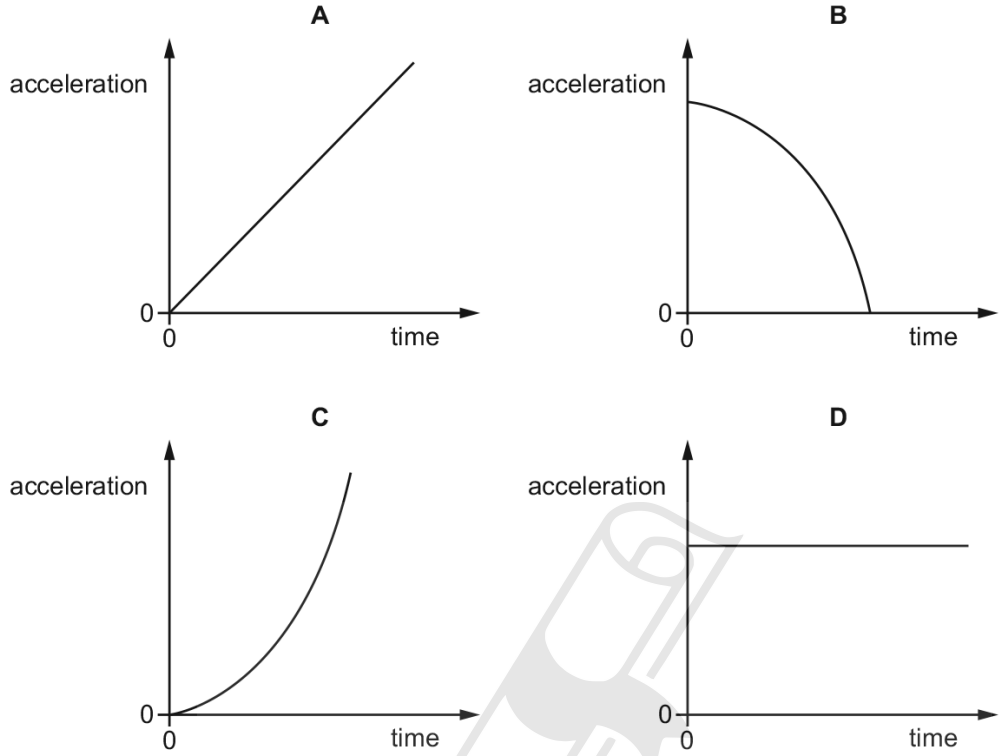

Which row describes the speed of the vehicle in each section of the graph?

| | P to Q | Q to R | R to S |
|---|---|---|---|
| **A** | constant | zero | constant |
| **B** | constant | zero | decreasing |
| **C** | increasing | constant | decreasing |
| **D** | increasing | zero | constant |

64. 0625_w16_qp_21 Q: 2

A stone falls freely from the top of a cliff. Air resistance may be ignored.

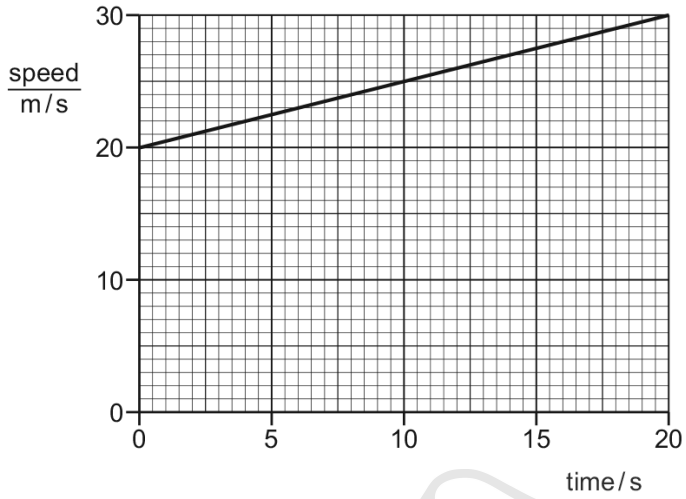
Which graph shows how the acceleration of the stone varies with time as it falls?



65. 0625_w16_qp_21 Q: 3

A car travels along a horizontal road in a straight line. The driver presses the accelerator to increase the speed of the car.

The speed-time graph for the car is shown.



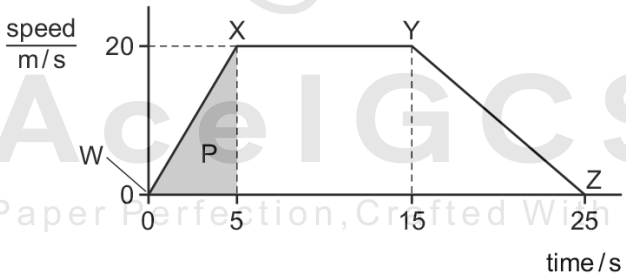

What is the acceleration of the car?

**A** $0.50\,m/s^2$ **B** $1.00\,m/s^2$ **C** $1.50\,m/s^2$ **D** $2.00\,m/s^2$

---

66. 0625_w16_qp_22 Q: 3

The speed-time graph for an object is shown.






Below are four statements about the acceleration of the object.

Which statement is correct?

**A** The acceleration in the first 5 s is given by area P.

**B** The acceleration increases between W and X.

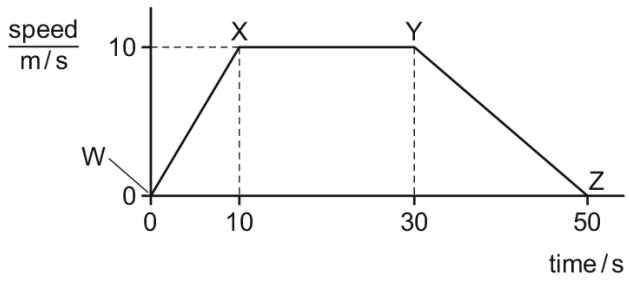
**C** The acceleration is negative between Y and Z.

**D** The deceleration between Y and Z is $(20 \div 25)\,m/s^2$.

---

67. 0625_w16_qp_23 Q: 3

The speed-time graph for an object is shown.




Below are four statements about the acceleration of the object.

Which statement is true?

**A** The acceleration in the first 10 s is $(10 \div 10)\,m/s^2$.

**B** The acceleration increases between W and X.

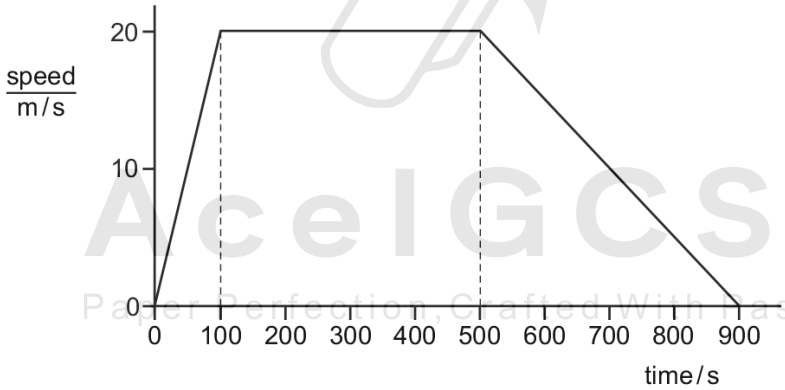
**C** The acceleration decreases between Y and Z.

**D** The deceleration between Y and Z is $(10 \div 50)\,m/s^2$.

---

68. 0625_m15_qp_12 Q: 2

The graph represents the motion of a train travelling between two stations.






Which statement about the train is correct?

**A** Its acceleration takes a longer time than its deceleration.

**B** It travels at constant speed for less than half of its journey time.

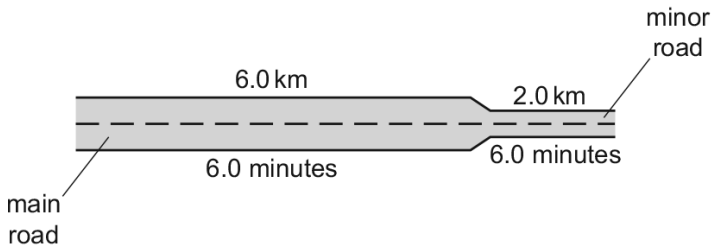
**C** It travels 2000 m in the first 100 s.

**D** It travels 10 000 m at constant speed.

---

69. 0625_m15_qp_12 Q: 3

A car travels 6.0 km along a main road in 6.0 minutes. It then travels 2.0 km along a minor road in 6.0 minutes.




Which calculation of average speed for the whole journey is correct?

**A** 8.0 ÷ 12.0 = 0.67 km / minute

**B** 12.0 ÷ 8.0 = 1.5 km / minute

**C** 8.0 + 12.0 = 20 km / minute

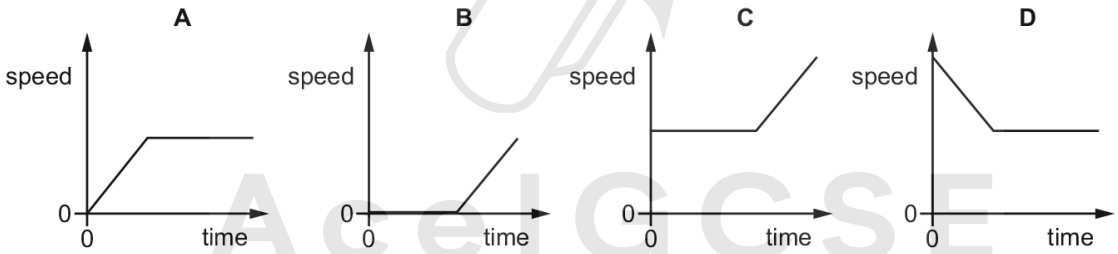
**D** 8.0 × 12.0 = 96 km / minute

---

70. 0625_s15_qp_11 Q: 2

A car moves with constant speed and then constant acceleration.

Which graph is the speed-time graph for the car?






---

71. 0625_s15_qp_11 Q: 3

A car travels 100 km. The journey takes two hours. The highest speed of the car is 80 km / h, and the lowest speed is 40 km / h.

What is the average speed for the journey?

**A** 40 km / h **B** 50 km / h **C** 60 km / h **D** 120 km / h

---

72. 0625_s15_qp_12 Q: 2

What does the area under a speed-time graph represent?

**A** acceleration

**B** average speed

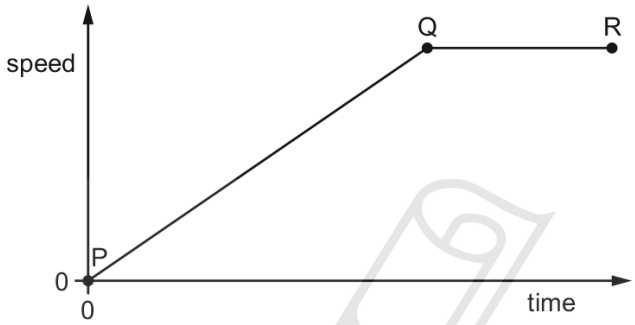
**C** deceleration

**D** distance travelled

---

73. 0625_s15_qp_13 Q: 2

The speed-time graph shows the motion of a car.




Which row describes the motion?

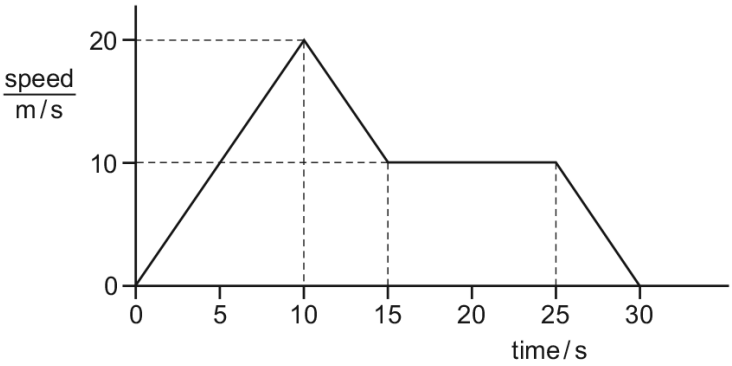
| | between P and Q | between Q and R |
|---|---|---|
| **A** | accelerating | moving at constant speed |
| **B** | accelerating | not moving |
| **C** | moving at constant speed | decelerating |
| **D** | moving at constant speed | not moving |



---

74. 0625_w15_qp_11 Q: 2

The graph represents the motion of a car.



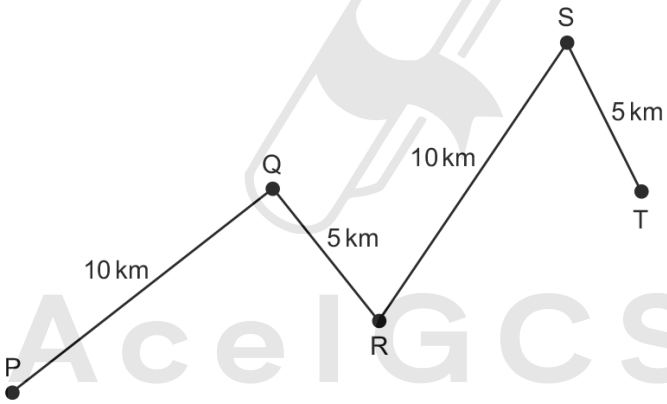

What is the distance travelled by the car while it is moving at a constant speed?

**A** 100 m **B** 150 m **C** 250 m **D** 300 m

---

75. 0625_w15_qp_11 Q: 3

A car travels along the route PQRST in 30 minutes.






What is the average speed of the car?

**A** 10 km/hour **B** 20 km/hour **C** 30 km/hour **D** 60 km/hour

---

76. 0625_w15_qp_12 Q: 2

The table shows the readings on a car speedometer at 5 second intervals.

| time / s | speed / km/h |
|---|---|
| 0 | 0 |
| 5 | 30 |
| 10 | 50 |
| 15 | 60 |
| 20 | 65 |

Which row describes the speed and the acceleration of the car?

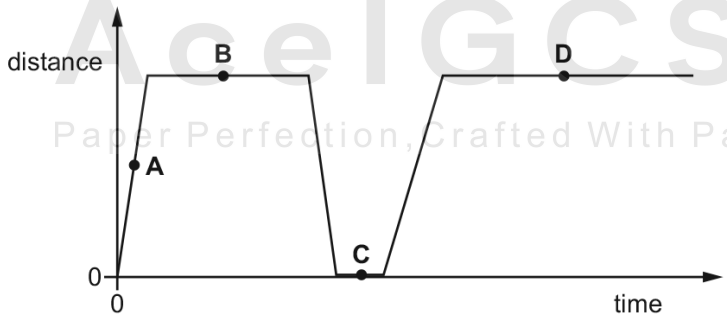
| | speed | acceleration |
|---|---|---|
| **A** | decreasing | zero |
| **B** | decreasing | not zero |
| **C** | increasing | zero |
| **D** | increasing | not zero |

---

77. 0625_w15_qp_13 Q: 2

The diagram shows the distance-time graph for a car.

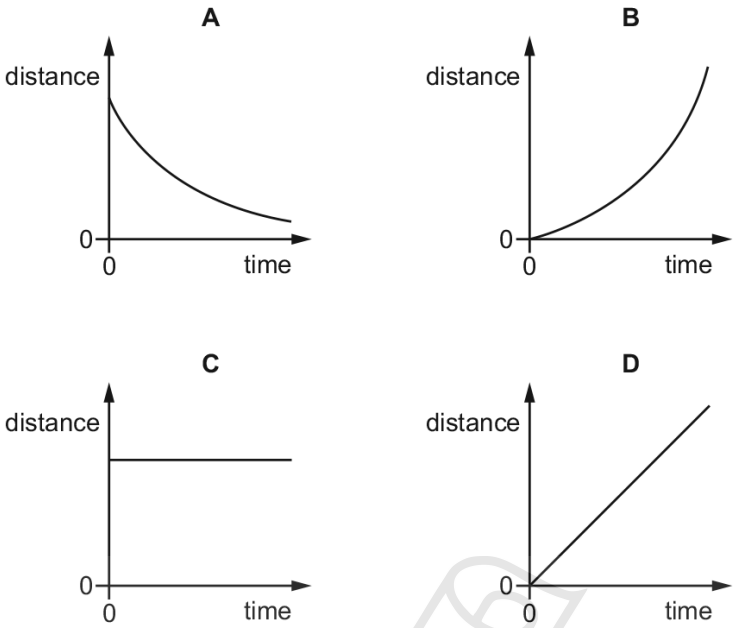
At which labelled point is the car moving with constant speed?




---

78. 0625_s14_qp_11 Q: 2

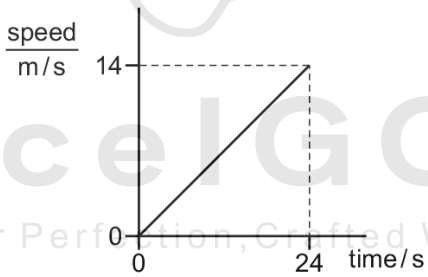
Which distance/time graph represents the motion of an object moving at constant speed?




---

79. 0625_s14_qp_11 Q: 3

The graph shows how the speed of a car changes with time.






Which calculation gives the distance travelled by the car in 24 seconds?

**A** $\left(\frac{14}{24}\right)$m

**B** $\left(\frac{24}{14}\right)$m

**C** $\left(\frac{24\times14}{2}\right)$m

**D** $(24\times14)$m

---

80. 0625_s14_qp_12 Q: 3

A car takes 15 minutes to travel along a road that is 20 km long.

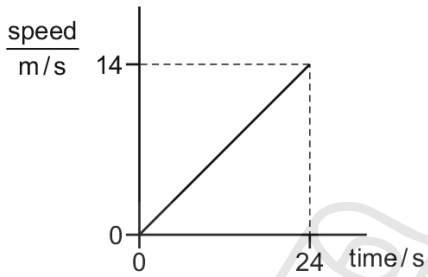
What is the average speed of the car?

**A** 0.75 km/h **B** 5.0 km/h **C** 80 km/h **D** 300 km/h

---

81. 0625_s14_qp_13 Q: 2

The graph shows how the speed of a car changes with time.




Which calculation gives the distance travelled by the car in 24 seconds?

**A** $\left(\frac{14}{24}\right)$m

**B** $\left(\frac{24}{14}\right)$m

**C** $\left(\frac{24 \times 14}{2}\right)$m

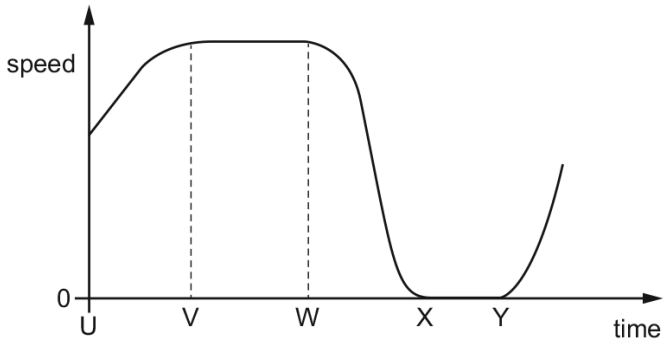
**D** $(24 \times 14)$m



---

82. 0625_w14_qp_11 Q: 2

The graph shows how the speed of a car changes with time.




Between which two times is the car stationary?

**A** U and V **B** V and W **C** W and X **D** X and Y

---

83. 0625_w14_qp_11 Q: 3

A man stands by a railway track.

A train travelling at 40 m/s takes 2.0 s to pass the man.

What is the length of the train?

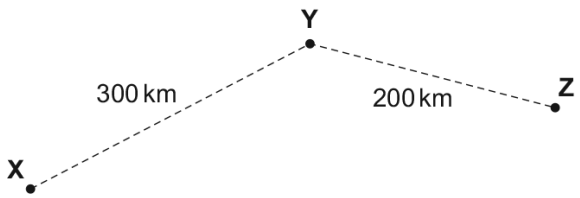
**A** 20 m **B** 38 m **C** 40 m **D** 80 m



---

84. 0625_w14_qp_13 Q: 3

An aeroplane flies from town **X** to town **Z**, stopping for 1 hour at town **Y** to pick up more passengers. The distances between the towns are shown in the diagram.




The total time taken between leaving **X** and arriving at **Z** is 3 hours.

What is the average speed of the aeroplane **in the air**?

**A** $\frac{500}{4}$ km/h **B** $\frac{500}{3}$ km/h **C** $\frac{500}{2}$ km/h **D** $\frac{500}{1}$ km/h

---

85. 0625_s13_qp_11 Q: 2

Which person is experiencing an acceleration?

**A** a driver of a car that is braking to stop at traffic lights

**B** a passenger in a train that is stationary in a railway station

**C** a shopper in a large store ascending an escalator (moving stairs) at a uniform rate

**D** a skydiver falling at constant speed towards the Earth

---

86. 0625_s13_qp_11 Q: 3

A car travels at various speeds during a short journey.

The table shows the distances travelled and the times taken during each of four stages P, Q, R and S.

| stage | P | Q | R | S |
|---|---|---|---|---|
| distance travelled / km | 1.8 | 3.6 | 2.7 | 2.7 |
| time taken / minutes | 2 | 2 | 4 | 3 |

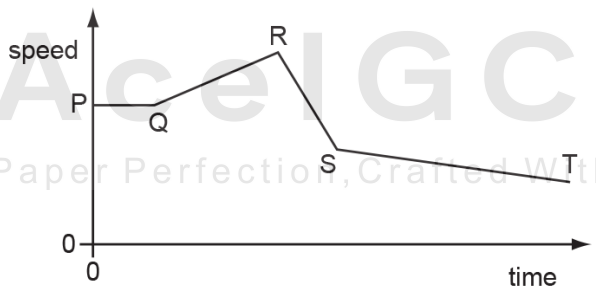
During which two stages is the car travelling at the same average speed?

**A** P and Q **B** P and S **C** Q and R **D** R and S

---

87. 0625_w13_qp_11 Q: 2

The diagram shows the speed / time graph for a train as it travels along a track.






For which part of the graph is the train's speed changing at the greatest rate?

**A** PQ **B** QR **C** RS **D** ST

---

88. 0625_w13_qp_11 Q: 3

A small steel ball is dropped from a low balcony.

Ignoring air resistance, which statement describes its motion?

**A** It falls with constant acceleration.

**B** It falls with constant speed.

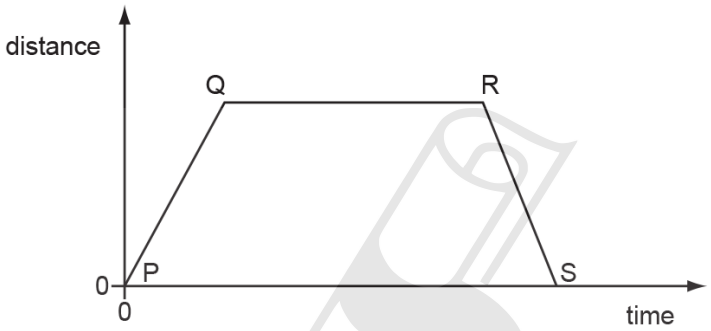
**C** It falls with decreasing speed.

**D** It falls with increasing acceleration.

---

89. 0625_w13_qp_13 Q: 2

The graph shows how the distance travelled by a vehicle changes with time.




Which row describes the speed of the vehicle in each section of the graph?

| | P to Q | Q to R | R to S |
|---|---|---|---|
| **A** | constant | zero | constant |
| **B** | constant | zero | decreasing |
| **C** | increasing | constant | decreasing |
| **D** | increasing | zero | decreasing |

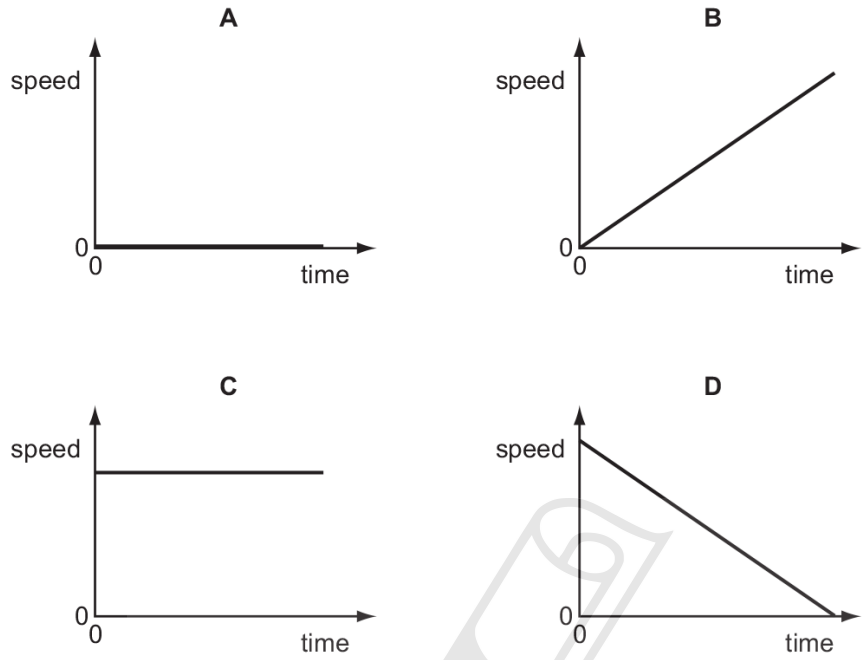


---

90. 0625_s12_qp_11 Q: 2

A car is moving downhill along a road at a constant speed.

Which graph is the speed/time graph for the car?




---

91. 0625_s12_qp_11 Q: 3

In a race, a car travels 60 times around a 3.6 km track. This takes 2.4 hours.

What is the average speed of the car?

**A** 1.5 km/h **B** 90 km/h **C** 144 km/h **D** 216 km/h



---

92. 0625_w12_qp_11 Q: 2

Two stones of different weight fall at the same time from a table. Air resistance may be ignored.

What will happen and why?

| | what will happen | why |
|---|---|---|
| **A** | both stones hit the floor at the same time | acceleration of free fall is constant |
| **B** | both stones hit the floor at the same time | they fall at constant speed |
| **C** | the heavier stone hits the floor first | acceleration increases with weight |
| **D** | the heavier stone hits the floor first | speed increases with weight |

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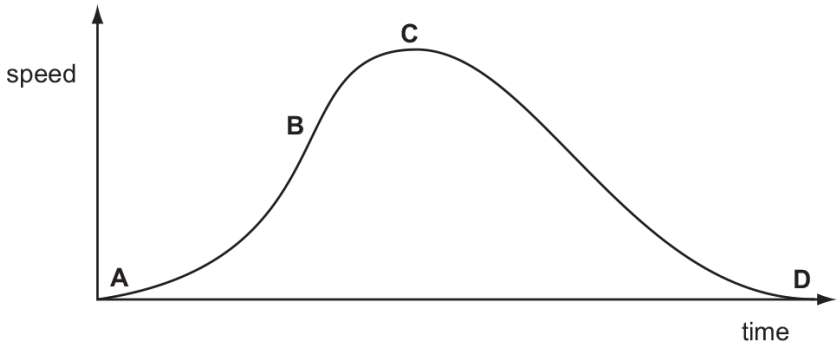
93. 0625_w12_qp_11 Q: 3

The speed-time graph shown is for a bus travelling between stops.

Where on the graph is the acceleration of the bus greatest?



| SN | Paper | Q. No. | Answer |
|---|---|---|---|
| 01 | 0625_m22_qp_22 | 2 | D |
| 02 | 0625_m22_qp_22 | 3 | D |
| 03 | 0625_m21_qp_22 | 2 | D |
| 04 | 0625_m21_qp_22 | 3 | C |
| 05 | 0625_s21_qp_21 | 2 | B |
| 06 | 0625_s21_qp_21 | 3 | A |
| 07 | 0625_s21_qp_22 | 3 | D |
| 08 | 0625_s21_qp_23 | 3 | B |
| 09 | 0625_w21_qp_21 | 2 | D |
| 10 | 0625_w21_qp_22 | 2 | D |
| 11 | 0625_w21_qp_23 | 2 | A |
| 12 | 0625_m20_qp_22 | 2 | A |
| 13 | 0625_m20_qp_22 | 3 | D |
| 14 | 0625_p20_qp_20 | 3 | B |
| 15 | 0625_s20_qp_21 | 2 | A |
| 16 | 0625_s20_qp_21 | 3 | A |
| 17 | 0625_w20_qp_21 | 2 | A |
| 18 | 0625_w20_qp_21 | 3 | D |
| 19 | 0625_w20_qp_22 | 2 | C |
| 20 | 0625_w20_qp_23 | 2 | B |
| 21 | 0625_w20_qp_23 | 3 | B |
| 22 | 0625_m19_qp_22 | 2 | C |
| 23 | 0625_m19_qp_22 | 3 | C |
| 24 | 0625_s19_qp_21 | 2 | C |
| 25 | 0625_s19_qp_21 | 3 | C |
| 26 | 0625_s19_qp_22 | 2 | C |
| 27 | 0625_s19_qp_23 | 2 | D |
| 28 | 0625_w19_qp_21 | 2 | C |
| 29 | 0625_w19_qp_21 | 3 | B |
| 30 | 0625_w19_qp_22 | 3 | B |
| 31 | 0625_w19_qp_23 | 2 | D |
| 32 | 0625_m18_qp_22 | 2 | C |
| 33 | 0625_m18_qp_22 | 3 | D |
| 34 | 0625_s18_qp_21 | 2 | C |
| 35 | 0625_s18_qp_21 | 3 | D |
| 36 | 0625_s18_qp_22 | 3 | B |
| 37 | 0625_s18_qp_23 | 3 | A |
| 38 | 0625_w18_qp_21 | 2 | C |
| 39 | 0625_w18_qp_21 | 3 | B |
| 40 | 0625_w18_qp_22 | 2 | B |
| 41 | 0625_w18_qp_22 | 3 | B |
| 42 | 0625_w18_qp_23 | 2 | A |
| 43 | 0625_w18_qp_23 | 3 | A |
| 44 | 0625_m17_qp_22 | 2 | D |
| 45 | 0625_m17_qp_22 | 3 | B |
| 46 | 0625_s17_qp_21 | 2 | B |
| 47 | 0625_s17_qp_22 | 2 | B |
| 48 | 0625_s17_qp_22 | 3 | C |
| 49 | 0625_s17_qp_23 | 3 | C |

| SN | Paper | Q. No. | Answer |
|---|---|---|---|
| 50 | 0625_w17_qp_21 | 2 | A |
| 51 | 0625_w17_qp_21 | 3 | A |
| 52 | 0625_w17_qp_22 | 2 | D |
| 53 | 0625_m16_qp_22 | 2 | C |
| 54 | 0625_m16_qp_22 | 3 | D |
| 55 | 0625_p16_qp_20 | 3 | B |
| 56 | 0625_s16_qp_21 | 2 | A |
| 57 | 0625_s16_qp_21 | 3 | A |
| 58 | 0625_s16_qp_22 | 2 | B |
| 59 | 0625_s16_qp_22 | 3 | B |
| 60 | 0625_s16_qp_22 | 5 | A |
| 61 | 0625_s16_qp_23 | 2 | C |
| 62 | 0625_s16_qp_23 | 3 | C |
| 63 | 0625_w16_qp_21 | 1 | A |
| 64 | 0625_w16_qp_21 | 2 | D |
| 65 | 0625_w16_qp_21 | 3 | A |
| 66 | 0625_w16_qp_22 | 3 | C |
| 67 | 0625_w16_qp_23 | 3 | A |
| 68 | 0625_m15_qp_12 | 2 | B |
| 69 | 0625_m15_qp_12 | 3 | A |
| 70 | 0625_s15_qp_11 | 2 | C |
| 71 | 0625_s15_qp_11 | 3 | B |
| 72 | 0625_s15_qp_12 | 2 | D |
| 73 | 0625_s15_qp_13 | 2 | A |
| 74 | 0625_w15_qp_11 | 2 | A |
| 75 | 0625_w15_qp_11 | 3 | D |
| 76 | 0625_w15_qp_12 | 2 | D |
| 77 | 0625_w15_qp_13 | 2 | A |
| 78 | 0625_s14_qp_11 | 2 | D |
| 79 | 0625_s14_qp_11 | 3 | C |
| 80 | 0625_s14_qp_12 | 3 | C |
| 81 | 0625_s14_qp_13 | 2 | C |
| 82 | 0625_w14_qp_11 | 2 | D |
| 83 | 0625_w14_qp_11 | 3 | D |
| 84 | 0625_w14_qp_13 | 3 | C |
| 85 | 0625_s13_qp_11 | 2 | A |
| 86 | 0625_s13_qp_11 | 3 | B |
| 87 | 0625_w13_qp_11 | 2 | C |
| 88 | 0625_w13_qp_11 | 3 | A |
| 89 | 0625_w13_qp_13 | 2 | A |
| 90 | 0625_s12_qp_11 | 2 | C |
| 91 | 0625_s12_qp_11 | 3 | B |
| 92 | 0625_w12_qp_11 | 2 | A |
| 93 | 0625_w12_qp_11 | 3 | B |