Speed Time and Distance Questions

Latest Speed Time and Distance MCQ Objective Questions

Question 1:

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I walk a certain distance and ride back taking a total time of 37 minutes. I could walk both ways in 55 minutes. How long would it take me to ride both the ways?

1. 29 minutes
2. 19 minutes
3. 20 minutes
4. None of these

Answer (Detailed Solution Below)

Option 2 : 19 minutes

Win over the concepts of Speed Time and Distance and get a step ahead with the preparations for Quantitative Aptitude with Testbook.

Speed Time and Distance Question 1 Detailed Solution

Given:

Time is taken by both walk and ride = 37 minutes

Time is taken when walking both ways = 55 minutes

Calculation:

Let the time taken by walking and riding be T_w and T_r respectively.

According to the question,

$\Rightarrow T_w + T_r = 37$ ----(1)

Again, According to the question,

$\Rightarrow 2T_w = 55$ ----(2)

After multiplying the equation (1) by 2 and then subtracted with equation (2)

$\Rightarrow 2T_w + 2T_r - 2T_w = 74 - 55$

$\Rightarrow 2T_r = 19$

∴ 19 minutes time is taken by me to ride both ways.

Question 2:

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A man decided to cover a distance of 12 km in 144 minutes. He decided to cover two thirds of the distance at 4 km / hr and the remaining at some different speed. Find the speed after the two third distance has been covered.

1. 12 km/hr
2. 10 km/hr
3. 8 km/hr
4. 13 km/hr

Answer (Detailed Solution Below)

Option 2 : 10 km/hr

Speed Time and Distance Question 2 Detailed Solution

Let's break this down step by step:

1. Total Distance: 12 km
2. Total Time: 144 minutes (which is 2.4 hours)

Step 1: Calculate the distance covered at 4 km/hr

- Two-thirds of the total distance: $\frac{2}{3} \times 12\ \text{km} = 8\ \text{km}$
- Time taken to cover 8 km at 4 km/hr:

$$\text{Time} = \frac{\text{Distance}}{\text{Speed}} = \frac{8\ \text{km}}{4\ \text{km/hr}} = 2\ \text{hours}$$

Step 2: Calculate the remaining distance and time

Step 2: Calculate the remaining distance and time

- Remaining distance:

$$12\ \text{km} - 8\ \text{km} = 4\ \text{km}$$

- Remaining time

$$2.4\ \text{hours} - 2\ \text{hours} = 0.4\ \text{hours}$$

Step 3: Calculate the speed for the remaining distance

- Speed required for the remaining 4 km in 0.4 hours:

$$\text{Speed} = \frac{\text{Distance}}{\text{Time}} = \frac{4\ \text{km}}{0.4\ \text{hours}} = 10\ \text{km/hr}$$

So, the speed after the two-thirds distance has been covered is 10 km/hr.

Question 3:

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The distance between two towns is covered in 9 hours at a speed of 60 kmph. By how much should the speed (in km/h) be increased so that 1 hour of the travelling time is saved?

1. 7.5
2. 10
3. 15
4. 12.5

Answer (Detailed Solution Below)

Option 1 : 7.5

Speed Time and Distance Question 3 Detailed Solution

Given:

Distance between two towns = Distance covered at 60 kmph in 9 hours.

Speed = 60 kmph, Time = 9 hours.

Formula Used:

Distance = Speed × Time

New speed = Original speed + Increase in speed

New time = Original time - Time saved

Calculation:

Distance = 60 kmph × 9 hours = 540 km

To save 1 hour, new time = 9 hours - 1 hour = 8 hours

Using Distance = New speed × New time

⇒ 540 = New speed × 8

⇒ New speed = 540 / 8 = 67.5 kmph

⇒ Increase in speed = New speed - Original speed

⇒ Increase in speed = 67.5 kmph - 60 kmph = 7.5 kmph

The speed should be increased by 7.5 km/h.

Question 4:

View this Question Online >

Naveen has to leave office exactly after 20 minutes to exactly catch a train which leaves station at 6.40 p.m. and it is 5.45 p.m. now. How much time does it take to travel from

office to the station ?

1. 55 minutes
2. 1 hour
3. 35 minutes
4. 30 minutes

Answer (Detailed Solution Below)

Option 3 : 35 minutes

Speed Time and Distance Question 4 Detailed Solution

Given:

Naveen has to leave office exactly after 20 minutes to exactly catch a train which leaves the station at 6.40 p.m. and it is 5.45 p.m. now.

Formula used:

Total travel time = Train departure time - (Current time + Time left to leave office)

Calculation:

Train departure time = 6.40 p.m.

Current time = 5.45 p.m.

Time left to leave office = 20 minutes

First, convert all times to minutes past 5.00 p.m.:

Train departure time = 6.40 p.m. = 100 minutes past 5.00 p.m.

Current time = 5.45 p.m. = 45 minutes past 5.00 p.m.

Time left to leave office = 20 minutes

Total travel time = Train departure time - (Current time + Time left to leave office)

⇒ Total travel time = 100 minutes - (45 minutes + 20 minutes)

⇒ Total travel time = 100 minutes - 65 minutes

⇒ Total travel time = 35 minutes

Therefore, the time it takes to travel from office to the station is 35 minutes.

Hence Option (3) is correct.

Question 5:

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A record player stylus moves along a spiral groove cut on an annular portion of a disc. A record with inner radius 4 cm and outer radius 10 cm of the annulus, turning 100 times plays for 22 minutes. During this time the stylus travels at an average linear speed that is approximately equal to

1. 100 m/h
2. 120 m/h
3. 220 m/h
4. 440 m/h

Answer (Detailed Solution Below)

Option 2 : 120 m/h

Speed Time and Distance Question 5 Detailed Solution

The correct answer is **120m/h**

Explanation:

Given:

A record player stylus moves along a spiral groove cut on an annular portion of a disc.

Inner radius of the annulus = 4 cm

Outer radius of the annulus = 10 cm

Number of turns = 100

Total playing time = 22 minutes

Calculation:

The distance travelled by the stylus in one complete turn is the average circumference of the annulus.

Average radius = (Inner radius + Outer radius) / 2

Average radius = (4 cm + 10 cm) / 2 = 7 cm

Average circumference = 2 * π * Average radius

Average circumference = 2 * π * 7 cm ≈ 44 cm

Total distance travelled by the stylus in 100 turns = 100 * 44 cm = 4400 cm

Total distance travelled by the stylus in meters = 4400 cm / 100 = 44 meters

Total playing time in hours = 22 minutes / 60 ≈ 0.3667 hours

Average linear speed = Total distance / Total playing time

Average linear speed = 44 meters / 0.3667 hours ≈ 120 meters per hour

Therefore, the correct answer is 120 m/h

Top Speed Time and Distance MCQ Objective Questions

Question 6 View this Question Online >

Running at a speed of 60 km per hour, a train passed through a 1.5 km long tunnel in two minutes, What is the length of the train ?

1. 250 m

2. 500 m

3. 1000 m

4. 1500 m

Answer (Detailed Solution Below)

Option 2 : 500 m

Speed Time and Distance Question 6 Detailed Solution

Given:

Speed is 60 km per hour,

Train passed through a 1.5 km long tunnel in two minutes

Formula used:

Distance = Speed × Time

Calculation:

Let the length of the train be L

According to the question,

Total distance = 1500 m + L

Speed = 60(5/18)

⇒ 50/3 m/sec

Time = 2 × 60 = 120 sec

⇒ 1500 + L = (50/3)× 120

⇒ L = 2000 - 1500

⇒ L = 500 m

∴ The length of the train is 500 m.

Question 7 View this Question Online >

A, B and C run simultaneously, starting from a point, around a circular track of length 1200 m, at respective speeds of 2 m/s, 4 m/s and 6 m/s. A and B run in the same direction, while C runs in the opposite direction to the other two. After how much time will they meet for the first time?

1. 10 minutes
2. 9 minutes
3. 12 minutes
4. 11 minutes

Answer (Detailed Solution Below)

Option 1 : 10 minutes

Speed Time and Distance Question 7 Detailed Solution

Given:

Total track length = 1200 m

Speed of A = 2 m/s ; speed of B = 4 m/s

Speed of C = 6 m/s

Formula used:

Distance = relative speed × time

Calculation:

Relative speed of A and B = (4 - 2) = 2 m/s

Relative speed of B and C = (6 + 4) = 10 m/s

Relative speed of A and C = (6 + 2) = 8 m/s

Time taken by A and B = 1200/2 = 600 sec

Time taken by B and C = 1200/10 = 120 sec

Time taken by A and C = 1200/8 = 150 sec

A, B and C will meet at = L.C.M {600,120, 150} = 600 sec = 600/60 = 10 minutes

∴ The correct answer is 10 minutes.

Question 8 View this Question Online >

In a 1500 m race, Anil beats Bakul by 150 m and in the same race Bakul beats Charles by 75 m. By what distance does Anil beat Charles?

1. 217.50 m
2. 200.15 m
3. 293.50 m
4. 313.75 m

Answer (Detailed Solution Below)

Option 1 : 217.50 m

Speed Time and Distance Question 8 Detailed Solution

Given:

In a 1500 m race, Anil beats Bakul by 150 m and in the same race Bakul beats Charles by 75 m.

Concept used:

Time × Speed = Distance

Calculation:

According to the question,

Anil goes 1500m while Bakul goes (1500 - 150) i.e. 1350m.

Ratio of speed of Anil and Bakul = 1500 : 1350 = 10 : 9 = 200 : 180

According to the question,

Bakul goes 1500m while Charlie goes (1500 - 75) i.e. 1425m.

Ratio of speed of Bakul and Charlie = 1500 : 1425 = 20 : 19 = 180 : 171

So, the ratio of the speeds of Anil, Bakul and Charlie = 200 : 180 : 171

Let the speeds of Anil, Bakul and Charlie be 200k, 180k and 171k m/s respectively.

Time taken by Anil to finish the race = 1500/200k = 7.5/k seconds

Now, Anil beats Charlie by = (200 - 171)k × 7.5/k = 217.5m

∴ Anil beat Charlie by 217.5m.

Shortcut Trick

In a 1500 m race, Anil beats Bakul by 150 m

When Anil completes the race, Bakul covered (1500 - 150) = 1350 m

In a 1500 m race Charles is 75 m behind Bakul

So, in 1350 m race Charles is 75/1500 × 1350 = 67.5 m behind Bakul

So, Charles is (67.5 + 150) = 217.5 m behind from Anil in 1500 m race

∴ Anil beat Charlie by 217.5m.

Question 9 View this Question Online >

Geeta runs 5/2 times as fast as Babita. In a race, if Geeta gives a lead of 40 m to Babita, find the distance from the starting point where both of them will meet (correct up to two decimal places).

1. 66.67 m
2. 65 m
3. 65.33 m
4. 66 m

Answer (Detailed Solution Below)

Option 1 : 66.67 m

Speed Time and Distance Question 9 Detailed Solution

Given:

Geeta runs 5/2 times as fast as Babita

Geeta gives a lead of 40 m to Babita

Formula Used:

Distance = Speed × Time

Calculation:

Let the speed of Babita be 2x

⇒ Speed of Geeta = (5/2) × 2x = 5x

Let the distance covered by Geeta be y meters

⇒ Distance covered by Babita = (y - 40) meters

As time is constant, distance is directly proportional to speed

$\Rightarrow \frac{2x}{5x} = \frac{y-40}{y}$

⇒ 2y = 5y - 200

⇒ y = 200/3 = 66.67m

∴ The distance from the starting point where both of them will meet is 66.67 m

Question 10

View this Question Online >

A man travels from A to B at a speed of 36 km/hr in 74 minutes and he travels a distance from B to C with a speed of 45 km/hr in 111 minutes. Find the average speed of whole journey.

1. 41.4 km/hr
2. 39.8 km/hr
3. 40.8 km/hr
4. 36.2 km/hr

Answer (Detailed Solution Below)

Option 1 : 41.4 km/hr

Speed Time and Distance Question 10 Detailed Solution

Given:

A man travels from A to B at a speed of 36 km/hr in 74 minutes and he travels a distance from B to C with a speed of 45 km/hr in 111 minutes.

Formula used:

Average speed = Total distance/Total time taken

Calculation:

Time taken = 74 min : 111 min [given]

Ratio of Time taken = 2 : 3

Average Speed = $\frac{36 \times 2 + 45 \times 3}{2 + 3}$

Average Speed = 207/5

Average Speed = 41.4 km/hr

∴ The average speed of whole journey is 41.4 km/h

Question 11 View this Question Online >

A boat goes 20 km upstream and 44 km downstream in 8 hours. In 5 hours, it goes 15 km upstream and 22 km downstream. Determine the speed of the boat in still water.

1. 6 km/h
2. 10 km/h
3. 8 km/h
4. 7 km/h

Answer (Detailed Solution Below)

Option 3 : 8 km/h

Speed Time and Distance Question 11 Detailed Solution

Concept used:

If upstream speed = U and downstream speed = D, then speed of boat = (U + D)/2

Calculation:

According to the question,

20/U + 44/D = 8 ... (i)

15/U + 22/D = 5 ... (ii)

Multiply by 2 the equation (ii) then subtract from 1 we get

20/U + 44/D = 8

30/U + 44/D = 10

- 10/U = - 2

⇒ U = 5 km/hr

Putting the value in equation (i), we get D = 11

So, the speed of boat = (U + D)/2 = (5 + 11)/2 = 8 km/hr

∴ The correct answer is 8 km/hr

Question 12

View this Question Online >

A thief committed a crime and escaped from the spot at a speed of 12 m/h. A Security guard started chasing him 20 minutes after the thief started running and caught him in the next 20 minutes. What is the speed (in m/h) of the Security guard?

1. 24

2. 30

3. 32

4. 36

Answer (Detailed Solution Below)

Option 1 : 24

Speed Time and Distance Question 12 Detailed Solution

Concept used:

Speed × time = distance

Calculation:

In the 1st 20 min the thief cover distance = 4 m,

20 min in hour = 20/60 hour

Let's assume that the speed of security guard = x m/hr, where x > 12

According to the question,

⇒ (x - 12) × 20/60 = 4

⇒ x - 12 = 12

⇒ x = 24

∴ The correct answer is 24 m/h

Question 13 View this Question Online >

Two trains, one 152.5 m long and the other 157.5 m long, coming from opposite directions crossed each other in 9.3 seconds. The combined speed of the two trains every hour would then be:

1. 130 km/hr
2. 125 km/hr
3. 115 km/hr
4. 120 km/hr

Answer (Detailed Solution Below)

Option 4 : 120 km/hr

Speed Time and Distance Question 13 Detailed Solution

Given:-

$Train_1$ = 152.5m

$Train_2$ = 157.5m

Time = 9.3 sec

Calculation:-

⇒ Total distance to be covered = total length of both the trains

= 152. 5 + 157.5

= 310 m

Total time taken = 9.3 sec

Speed = distance/time

= (310/9.3) m/sec

= (310/9.3) × (18/5)

= 120 km/hr

∴ The combined speed of the two trains every hour would then be 120 km/hr.

Alternate Method

When two trains are moving in opposite direction-

Let the speed of ine is 'v' and the second is 'u'

∴ Combined speed = v + u

Total distance = 152.5 + 157.5

= 310 m

∴ Combined speed = Total distance/total time

⇒ (v + u) = 310/9.3

⇒ (v + u) = 33.33 m/s

⇒ (v + u) = 33.33 × (18/5)

⇒ (v + u) = **120 km/hr**

Question 14

View this Question Online >

A car travels some distance at a speed of 8 km/hr and returns at a speed of 12 km/hr. If the total time taken by the car is 15 hours, then what is the distance (in km)?

1. 48
2. 60
3. 56
4. 72

Answer (Detailed Solution Below)

Option 4 : 72

Speed Time and Distance Question 14 Detailed Solution

Let the distance be d km.

We know that,

Distance = Speed x Time

$\Rightarrow \frac{d}{8} + \frac{d}{12} = 15$

$\Rightarrow \frac{3d+2d}{24} = 15$

⇒ d = 72 km

Question 15

View this Question Online >

A car completes a journey in seven hours. It covered half of the distance at 40 kmph and the remaining half at 60 kmph speed. Then, the distance (in km) covered is:

1. 280
2. 300
3. 336
4. 420

Answer (Detailed Solution Below)

Option 3 : 336

Speed Time and Distance Question 15 Detailed Solution

Given data:

Total time of journey = 7 hours

Speed of car for half distance = 40 km/hr

Speed of car for remaining distance = 60 km/hr

Concept used:

Distance = Speed × Time

Calculation:

Let total distance be 2x.

$Time_1$ = Distance/Speed

⇒ x/40 hours

$Time_2$ = Distance/Speed

⇒ x/60 hours

Total time = $Time_1$ + $Time_2$

⇒ 7 = x/40 + x/60

⇒ 7 = (3x + 2x)/120

⇒ 7 = 5x/120

⇒ x = 7 × 24

⇒ x = 168 km

⇒ Total distance = 2x

⇒ 2 × 168

⇒ 336 km

∴ Total distance covered by the car is 336 km.

~~Alternate Method~~

Concept used:

Average speed = $(2 \times Speed_1 \times Speed_2)/(Speed_1 + Speed_2)$

Calculation:

Since distance covered in both the cases is same we can apply concept of average velocity required

to cover same distance.

Average speed = $(2 \times \text{Speed}_1 \times \text{Speed}_2)/(\text{Speed}_1 + \text{Speed}_2)$

$\Rightarrow (2 \times 40 \times 60)/(40 + 60)$

$\Rightarrow 4800/100$

$\Rightarrow 48$ km/hr

Distance = Speed × Time

$\Rightarrow 48 \times 7$

$\Rightarrow 336$ km

$\therefore$ Total distance covered by the car is 336 km.