



Video Solution on Website:- <https://physicsaholics.com/home/courseDetails/41>

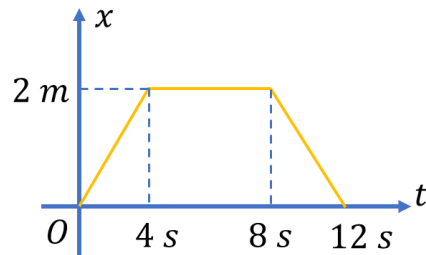
Video Solution on YouTube:- <https://youtu.be/IHAly8GLkms>

Written Solution on Website:- <https://physicsaholics.com/note/notesDetails/85>

- Q 1. A Body moves 6 m north. 8 m east and 10m vertically upwards, what is its resultant displacement from initial position:
(a) $10\sqrt{2}$ m (b) 10 m (c) $\frac{10}{\sqrt{2}}$ m (d) 20 m
- Q 2. An athlete completes one round of a circular track of radius R in 40 sec with uniform speed. What will be his displacement at the end of 2 min. 30 sec?
(a) zero (b) $\sqrt{2}R$ (c) $\frac{5}{2}\pi R$ (d) $\frac{15}{2}\pi R$
- Q 3. A car covers the first half of the distance between two places at 40 kmph and the other half at 60 kmph. The average speed of the car is:
(a) 40 kmph (b) 48 kmph
(c) 50 kmph (d) 60 kmph
- Q 4. A particle is constrained to move on a straight line path. It returns to the starting point after 10 sec. The total distance covered by the particle during this time is 30 m. Which of the following statements about the motion of the particle is false?
(a) Displacement of the particle is zero
(b) Average speed of the particle is 3 m/s
(c) Displacement of the particle is 30 m
(d) Average velocity of the particle is zero.
- Q 5. A particle moves along a semicircle of radius 10m from A to B in 5 seconds. The average velocity of the particle is:
(a) $2\pi m/s^{-1}$ (b) $4\pi m/s^{-1}$
(c) $2 m/s^{-1}$ (d) $4 m/s^{-1}$
- Q 6. A passenger travels along a straight line with velocity V_1 for first half time and with velocity V_2 for next half time, then the mean speed v is given by –
(a) $v = \frac{v_1+v_2}{2}$ (b) $v = \sqrt{v_1v_2}$
(c) $v = \sqrt{\frac{v_2}{v_1}}$ (d) $\frac{2}{v} = \frac{1}{v_1} + \frac{1}{v_2}$
- Q 7. A particle's position as a function of time is described as $y = 2t^2 + 3t + 4$. What is the average velocity of the particle from $t = 0$ to $t = 3$ sec?
(a) 3 m/s (b) 6 m/s
(c) 9 m/s (d) 12 m/s

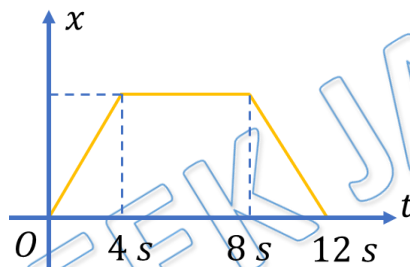


- Q 8. Position-time graph of a particle is shown below. What is the average velocity of the particle between the times $t = 0 \text{ s}$ to $t = 12 \text{ s}$?



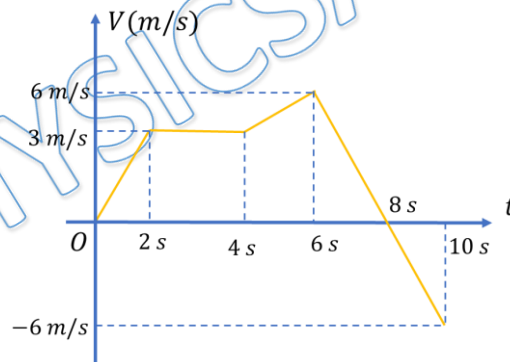
- (a) 1.33 m/s (b) zero
(c) 12 m/s (d) -01.33 m/s

- Q 9. Position-time graph of a particle is shown below. What is the average speed of the particle between the times $t = 8 \text{ s}$ to $t = 12 \text{ s}$?



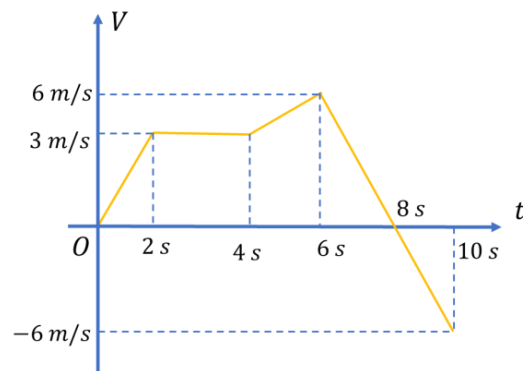
- (a) 0.5 m/s (b) -0.5 m/s
(c) zero (d) 2 m/s

- Q 10. Velocity-time graph of a particle is shown below. What is the average velocity of the particle between the times $t = 2 \text{ s}$ to $t = 6 \text{ s}$?



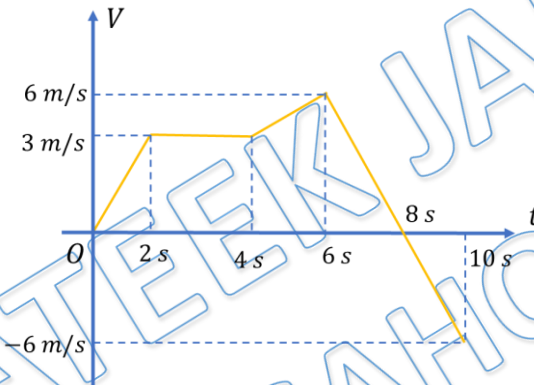
- (a) 0.5 m/s (b) 3.5 m/s
(c) -3.5 m/s (d) 5 m/s

- Q 11. Velocity-time graph of a particle is shown below. What is the average speed of the particle between the times $t = 0 \text{ s}$ to $t = 10 \text{ s}$?



- (a) 3.5 m/s (b) -3.5 m/s
(c) 3 (d) -3 m/s

Q 12. Velocity-time graph of a particle is shown below. What is the instantaneous velocity of the particle at = 5 s ?



- (a) 4 m/s (b) -4 m/s
(c) -4.5 m/s (d) 4.5 m/s

Answer Key

Q.1) a	Q.2) b	Q.3) b	Q.4) c	Q.5) d
Q.6) a	Q.7) c	Q.8) b	Q.9) a	Q.10) b
Q.11) c	Q.12) d			

PLUS **ICONIC****

- ✓ India's Best Educators
- ✓ Interactive Live Classes
- ✓ Structured Courses & PDFs
- ✓ Live Tests & Quizzes
- ✗ Personal Coach
- ✗ Study Planner

24 months	₹2,333/mo	>
No cost EMI	₹56,000	
18 months	₹2,625/mo	>
No cost EMI	₹47,250	
12 months	₹3,208/mo	>
No cost EMI	₹38,500	
6 months	₹4,667/mo	>
No cost EMI	₹28,000	

To be paid as a one-time payment

[View all plans](#)

 Add a referral code APPLY

PHYSICSLIVE

PLUS **ICONIC****

- ✓ India's Best Educators
- ✓ Interactive Live Classes
- ✓ Structured Courses & PDFs
- ✓ Live Tests & Quizzes
- ✗ Personal Coach
- ✗ Study Planner

24 months	₹2,100/mo	>
No cost EMI	+10% OFF ₹50,400	
18 months	₹2,363/mo	>
No cost EMI	+10% OFF ₹42,525	
12 months	₹2,888/mo	>
No cost EMI	+10% OFF ₹34,650	
6 months	₹4,200/mo	>
No cost EMI	+10% OFF ₹25,200	

To be paid as a one-time payment

[View all plans](#)

 Awesome! **PHYSICSLIVE** code applied ✗

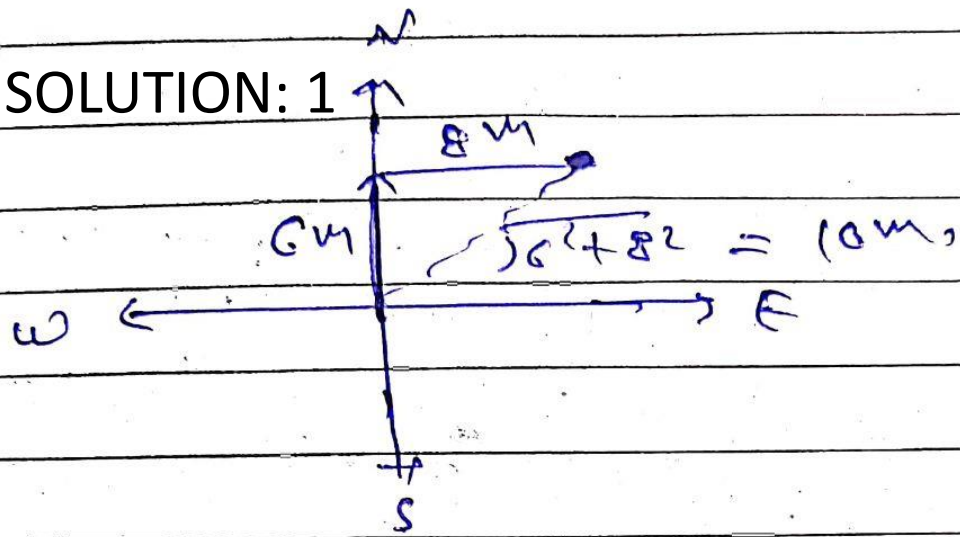
Use code **PHYSICSLIVE** to get 10% OFF on Unacademy PLUS.

Written Solution

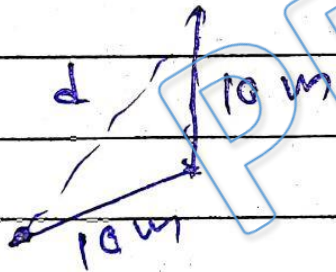
DPP-1 Kinematics: Speed, Velocity, Distance and Displacement

By Physicsaholics Team

SOLUTION: 1



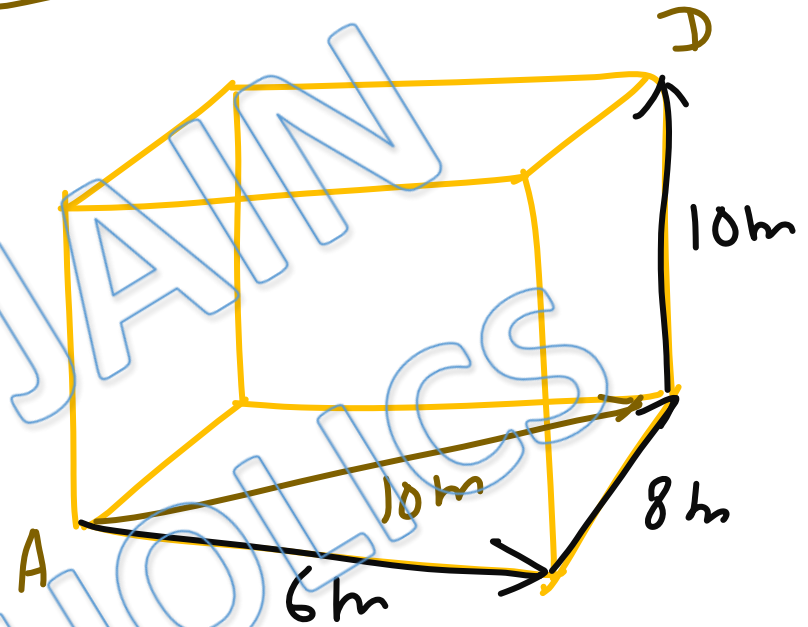
Now; 10 m in horizontal plane
& 10 m vertically upwards



$$d = \sqrt{10^2 + 10^2}$$

$$d = 10\sqrt{2} \text{ m}$$

OR



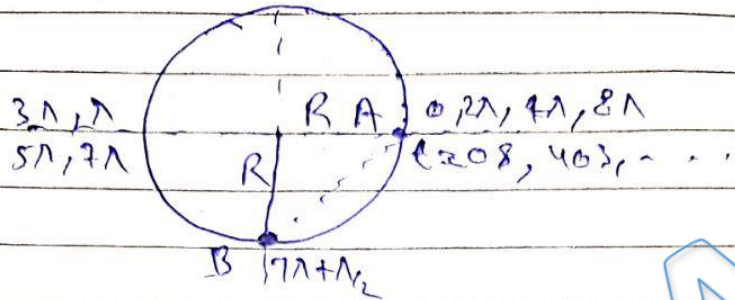
Displacement from A to D

$$= \sqrt{10^2 + 10^2}$$

$$= 10\sqrt{2} \text{ m}$$

ANS: a

SOLUTION: 2



at time $t = 2 \text{ min } 30 \text{ sec}$
 $= 120 + 30 = 150 \text{ sec}$

$$\omega = \frac{2\pi}{40} = \frac{\pi}{20} \text{ rad/sec}$$

angle covered in $t = 150 \text{ sec}$

$$\omega = \frac{\pi}{20} \times 150$$

$$= 15\pi/2$$

$$= (14 + 12)\pi/2 = 7\pi + \pi/2$$

\therefore if at $t = 0$
 Particle is at 'A'

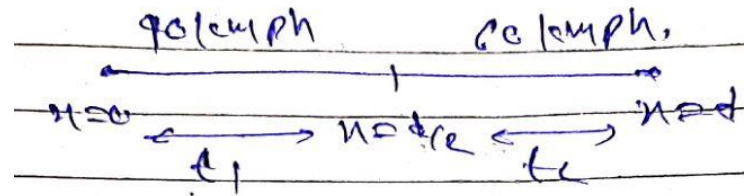
then at $t = 2 \text{ min } 30 \text{ sec}$
 Particle will be at 'B'

$$\therefore d = \sqrt{R^2 + R^2}$$

$$d = \sqrt{2} R$$

ANS: b

SOLUTION: 3



$$t_1 = \frac{d_1}{40} = \frac{d}{80} \text{ hr.}$$

$$t_2 = \frac{d_2}{60} = \frac{d}{120} \text{ hr.}$$

$$v = \frac{d}{t_1 + t_2}$$

$$v = \frac{d}{\frac{d}{80} + \frac{d}{120}} = \frac{1}{\frac{1}{80} + \frac{1}{120}}$$

$$v = \frac{1}{\frac{1}{40} \left(\frac{1}{2} + \frac{1}{3} \right)} = \frac{40}{\frac{1}{2} + \frac{1}{3}}$$

$$v = \frac{40}{\frac{5}{6}} = 40 \times \frac{6}{5}$$

$$v = 48 \text{ kmph}$$

ANS: b

SOLUTION: 4

$$t = 10 \text{ sec.}$$

$$\boxed{\text{Distance} = 30 \text{ m.}}$$

\therefore initial position = final position

$$\therefore \boxed{\text{Displacement} = \text{Zero}}$$

$$\text{Avg. speed} = \frac{\text{Distance}}{\text{time}} = \frac{30 \text{ m}}{10 \text{ sec.}}$$

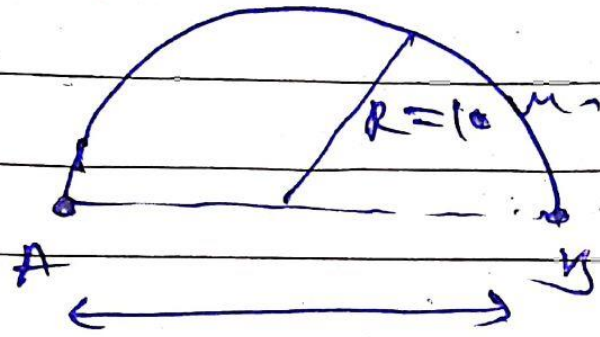
$$\boxed{\text{Avg. speed} = 3 \text{ m/sec}}$$

$$\text{Avg. Velocity} = \frac{\text{Displacement}}{\text{time}} = \frac{0 \text{ m}}{10 \text{ sec.}}$$

$$\boxed{\text{Avg. Velocity} = \text{Zero}}$$

ANS: C

SOLUTION: 5



$$d = 2R$$

$$\begin{aligned} \text{displacement} &= 2R \\ &= 2 \times 10 = 20 \text{ m} \end{aligned}$$

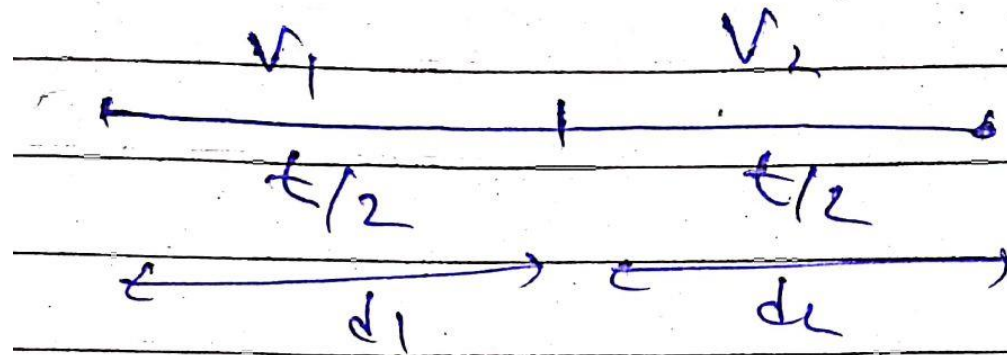
$$\text{Time} = 5 \text{ sec}$$

$$\begin{aligned} \text{Avg. Velocity} &= \frac{\text{Displacement}}{\text{Time}} \\ &= \frac{20}{5} \end{aligned}$$

$$\boxed{\text{Avg. Velocity} = 4 \text{ m/s}}$$

ANS: d

SOLUTION: 6



$$d_1 = v_1 \frac{t}{2} \quad d_2 = v_2 \frac{t}{2}$$

$$d = d_1 + d_2$$

$$\text{Avg. speed} = \frac{v_1 \frac{t}{2} + v_2 \frac{t}{2}}{\frac{t}{2} + \frac{t}{2}}$$

$$d = \frac{v_1 + v_2}{1+1}$$

$$\boxed{\text{Avg. Speed} = \frac{v_1 + v_2}{2}}$$

ANS: a

SOLUTION: 7

$$s = 2t^2 + 3t + 4$$

$$\text{at } t=0; \quad s = 4 \text{ m}$$

$$\begin{aligned} \text{at } t=3 \text{ sec}; \quad s &= 2(3)^2 + 3(3) + 4 \\ &= 18 + 9 + 4 \end{aligned}$$

$$s = 31 \text{ m}$$

$$\begin{aligned} \text{displacement} &= s_2 - s_1 \\ &= 27 \text{ m} \end{aligned}$$

$$\text{Avg velocity} = \frac{27}{3} = 9 \text{ m/s}$$

$$\boxed{\text{Avg. Velocity} = 9 \text{ m/s}}$$

ANS: C

SOLUTION: 8

$$\text{at } t=0; \quad u_1 = 0$$

$$\text{at } t=12\text{ s}; \quad u_2 = 0$$

$$\therefore \text{ displacement} = \text{Zero}$$

$$\therefore \text{ Avg. Velocity} = \frac{\text{Zero}}{12}$$

$$\boxed{\text{Avg. Velocity} = 0 \text{ m/s}}$$

ANS: b

SOLUTION: 9

$$\text{at } t = 8 \text{ sec}; u_1 = 2 \text{ m/s}$$

$$\text{at } t = 12 \text{ sec}; u_2 = 0 \text{ m/s}$$

$$\text{distance} = |u_2 - u_1|$$

$$= |0 - 2| = | -2 |$$

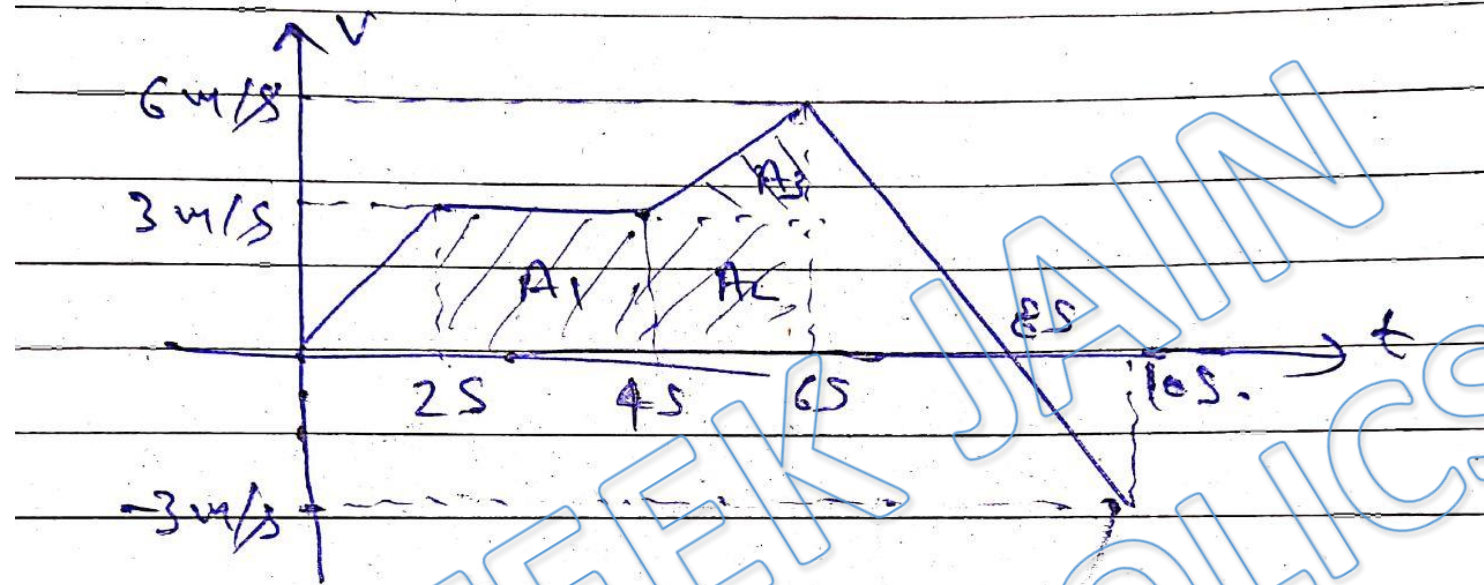
$$\text{distance} = 2 \text{ m}$$

$$\therefore \text{Avg speed} = \frac{\text{distance}}{\text{time}} = \frac{2 \text{ m}}{4 \text{ sec}}$$

$$\boxed{\text{Avg speed} = 0.5 \text{ m/s}}$$

ANS: a

SOLUTION: 10



for $t = 2 \text{ s}$ to $t = 6 \text{ s}$

displacement = $A_1 + A_2 + A_3$

$$= (2 \times 3) + (2 \times 3) + \frac{1}{2} \times 2 \times 3$$

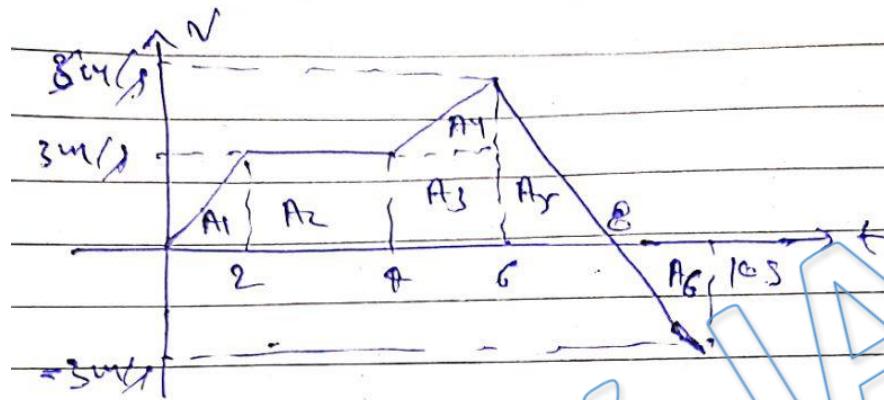
$$= 6 + 6 + 3$$

$$= 15 \text{ m}$$

$$\text{Avg. velocity} = \frac{15}{4} = 3.75 \text{ m/s}$$

ANS: b

SOLUTION: 11



$$\text{distance covered} = A_1 + A_2 + A_3 + A_4 + A_5 + |A_6|$$

$$= \left(\frac{1}{2} \times 2 \times 3\right) + (2 \times 3) + \left(\frac{1}{2} \times 2 \times 3\right)$$

$$+ \left(\frac{1}{2} \times 2 \times 6\right) + \left(\frac{1}{2} \times 2 \times 3\right)$$

$$= 3 + 6 + 3 + 6 + 3$$

$$d = 30 \text{ m}$$

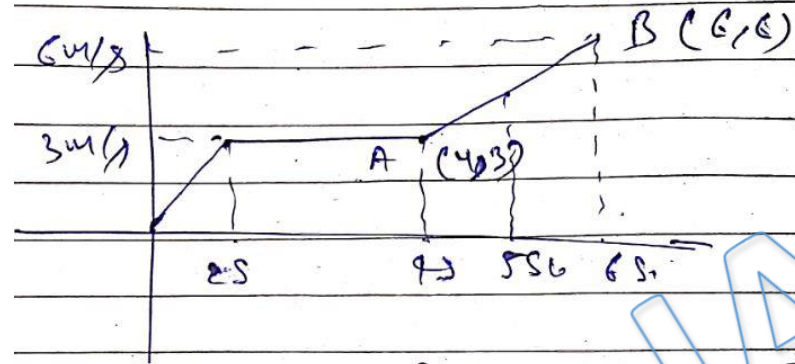
$$\text{Avg. speed} = \frac{d}{t}$$

$$= \frac{30}{10}$$

$$\boxed{\text{Avg. speed} = 3 \text{ m/s}}$$

ANS: C

SOLUTION:12



$$\text{slope of line AB} = \frac{6-3}{6-4}$$

$$= \frac{3}{2} \text{ m/s}$$

at $t = 4 \text{ sec}$

$$v = 3 \text{ m/s}$$

in 2 sec.

from A \rightarrow B

velocity increases $= \frac{3}{2} \text{ m/s}$

\therefore velocity at $t = 5 \text{ sec}$

$$v = (v_{\text{at } t=4\text{s}}) + \frac{3}{2}$$

$$v = 3 + \frac{3}{2} = 3 + 1.5$$

$$v = 4.5 \text{ m/s}$$

ANS: d

For Video Solution of this DPP, Click on below link

Video Solution
on Website:-

<https://physicsaholics.com/home/courseDetails/41>

Video Solution
on YouTube:-

<https://youtu.be/IHAly8GLkms>

Written Solution
on Website:-

<https://physicsaholics.com/note/notesDetails/85>

 **SUBSCRIBE**



[@Physicsaholics](#)

[@Physicsaholics_prateek](#)

[@NEET_Physics](#)

[@IITJEE_Physics](#)

[physicsaholics.com](#)

[Unacademy](#)



CLICK

Chalo Niklo