21 Nov 2024 Live Classes Schedule

Time	Class	Instructor
8:00AM	21 NOVEMBER 2024 DAILY CURRENT AFFAIRS	RUBY MA'AM
9:00AM	21 NOVEMBER 2024 DAILY DEFENCE UPDATES	DIVYANSHU SIR

SSB INTERVIEW LIVE CLASSES

Time	Class	Instructor
9:30AM	MOCK PERSONAL INTERVIEWS	ANURADHA MA'AM

NDA 1 2025 LIVE CLASSES

Time	Class	Instructor
11:30AM	GK - ECONOMICS - CLASS 4	RUBY MA'AM
1:00PM	PHYSICS - UNITS & DIMENSIONS - CLASS 1	NAVJYOTI SIR
4:30PM	ENGLISH - USAGE OF PAIRED WORDS - CLASS 1	ANURADHA MA'AM
5:30PM	MATHS - MATRICES & DETERMINANTS - CLASS 3	NAVJYOTI SIR

## CDS 1 2025 LIVE CLASSES

Time	Class	Instructor
11:30AM	GK - ECONOMICS - CLASS 3	RUBY MA'AM
1:00PM	PHYSICS - UNITS & DIMENSIONS - CLASS 1	NAVJYOTI SIR
4:30PM	ENGLISH - USAGE OF PAIRED WORDS - CLASS 1	ANURADHA MA'AM
7:00PM	MATHS - SPEED DISTANCE TIME - CLASS 3	NAVJYOTI SIR

QUESTION

In a race of $100m$, A runs at speed of $5km/h$. He gives a start of $8m$ to B and still defeat him by 20sec . What is the speed of B?
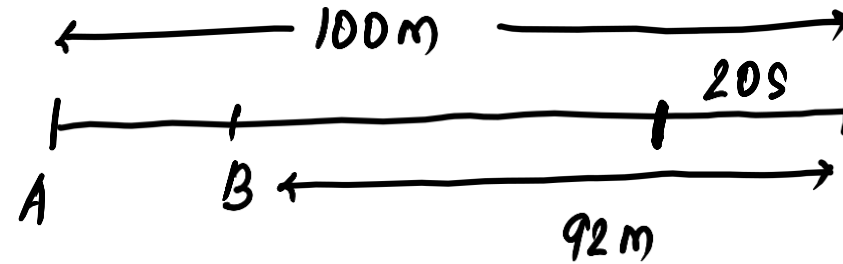
$$\text{Time taken by A} = \frac{100\,m}{5 \times \frac{5}{18}\,m/s}$$

$$= \frac{20 \times 18}{5} = 72\,s$$

$$\text{speed of B} = \frac{\text{distance by B}}{\text{Time taken by B}} = \frac{92}{72} = \frac{23}{18}\ m/s$$

Q) A scooterist completes a certain journey in 10 h. He covers half the distance at 30 km/h and the rest at 70 km/h. What is total distance of the journey ?

(a)   210 km

(b)   400 km $\sim d$

(c)   420 km

(d)   500 km

$$10 = \frac{d/2}{30} + \frac{d/2}{70}$$

$$20 = d\left(\frac{100}{2100}\right)$$

$$d = 21 \times 20 = 420 \ km$$

Q) A scooterist completes a certain journey in 10 h. He covers half the distance at 30 km/h and the rest at 70 km/ h. What is total distance of the journey ?

(a)   210 km   (b)   400 km
(c)   420 km   (d)   500 km

Ans: (c)

Q) B starts 4 minutes after A from the same point, for a place at a distance of 7 miles from the starting point. A on reaching the destination turns back and walks a mile where he meets B. If A's speed is a mile in 8 minutes then B's speed is a mile in ____ minutes.

(a) 9   (b) 12   (c) 10   (d) 8
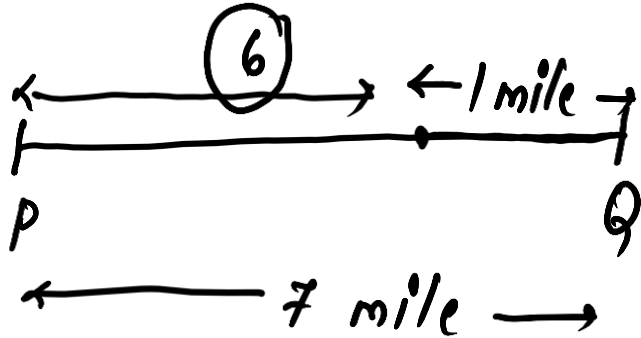
Time taken by A = $\dfrac{\text{distance}}{\text{speed}}$

(1 mile — 8 min)

8 mile

⌞ 8 × 8 = 64 min

$$64 = \frac{6}{V_B} + 4$$

$$V_B = \frac{6}{60} \text{ miles}/\text{min}$$

$$1 \text{ min} \underline{\hspace{2cm}} \frac{6}{60} \text{ miles}$$

$$\frac{1 \times 60}{6} \underline{\hspace{2cm}} 1 \text{ mile}$$

$$= \underline{10 \text{ min}}$$

Q) B starts 4 minutes after A from the same point, for a place at a distance of 7 miles from the starting point. A on reaching the destination turns back and walks a mile where he meets B. If A's speed is a mile in 8 minutes then B's speed is a mile in _____ minutes.

(a) 9   (b) 12   (c) 10   (d) 8

Ans: (c)

Q) A train crosses a telegraph post in 8s and a bridge 200 m long in 24 s. What is the length of the train ?

(a) 100 m   (b) 120 m

(c) 140 m   (d) 160 m

$'L'$ m.

speed of train be $'v'$ m/s.

$$\frac{L}{v} = 8 \quad\Rightarrow\quad L = 8v \quad\text{——} \quad ①$$

$$24 = \frac{L + 200}{v} \quad\Rightarrow\quad 24v = 8v + 200$$

$$16v = 200$$

$$v = \frac{200}{16} = \frac{50}{4} = \frac{25}{2}$$

$$L = 8v$$
$$= 8 \times \frac{25}{2} = \boxed{100\,m}$$

Q) A train crosses a telegraph post in 8s and a bridge 200 m long in 24 s. What is the length of the train ?

(a)   100 m   (b)   120 m
(c)   140 m   (d)   160 m

Ans: (a)

Q) The speeds of three buses are in the ratio $2:3:4$. The time taken by these buses to travel the same distance will be in the ratio

(a) $2:3:4$ (b) $4:3:2$

(c) $4:3:6$ (d) $6:4:3$

$$\text{speed} \longrightarrow 2:3:4$$

$$\text{time} \longrightarrow \frac{1}{2}:\frac{1}{3}:\frac{1}{4} \quad (\text{reciprocal})$$

$$6:4:3$$

Q) The speeds of three buses are in the ratio $2 : 3 : 4$. The time taken by these buses to travel the same distance will be in the ratio

(a) $2 : 3 : 4$ (b) $4 : 3 : 2$

(c) $4 : 3 : 6$ (d) $6 : 4 : 3$

Ans: (d)

Q) A passenger train departs from Delhi at 6 pm, for Mumbai. At 9 p.m., an express train, whose average speed exceeds that of the passenger train by 15 km/hour leaves Mumbai for Delhi. Two trains meet each other mid-route. At what time do they meet, given that the distance between the cities is 1080 km ?

(a)   4 pm.
(b)   2 am.
(c)   12 midnight
(d)   6 am

Let pessenger train speed be 'v' km/h.
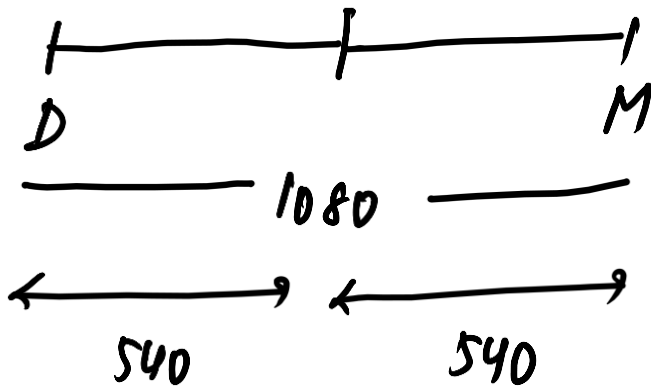
$$\left(\frac{540}{v}\right) = \left(\frac{540}{v+15}\right) + 3$$

$$540\left(\frac{1}{v} - \frac{1}{v+15}\right) = 3$$

$$540 \left(\frac{1}{v} - \frac{1}{v+15} \right) = 3$$

$$\frac{15}{v(v+15)} = \frac{1}{180}$$

$$v^2 + 15v - (180 \times 15) = 0$$

$$v^2 + 60v - 45v - (180 \times 15) = 0$$

$$v(v+60) - 45(v+60) = 0$$

$$(v-45)(v+60) = 0$$

$$180 \qquad 15$$

$$2 \times 90 \qquad \underline{3 \times 5}$$

$$\underline{4 \times 45} \qquad \underline{3 \times 5}$$

$$\boxed{v = 45} \qquad v = -60$$

$$(\text{rejected})$$

$$V = 45 \text{ km/h}$$

$$r + 15 = 60 \text{ km/h}$$

Pessenger train

$$\frac{540}{45} = \frac{36}{3} = 12 \text{ hours}$$

6 PM + 12 hours ⟶ ☁ 6 AM

Express train

$$\frac{540}{60} = 9 \text{ hrs}$$

9 PM + 9 hrs

↓ ☁ 6 AM

Q) A passenger train departs from Delhi at 6 pm, for Mumbai. At 9 p.m., an express train, whose average speed exceeds that of the passenger train by 15 km/hour leaves Mumbai for Delhi. Two trains meet each other mid-route. At what time do they meet, given that the distance between the cities is 1080 km ?

(a)   4 pm.
(b)   2 am.
(c)   12 midnight
(d)   6 am

Ans: (d)

Q) A boat goes 24 km upstream and 28 km downstream in 6 hours. It goes 30km upstream and 21 km downstream in 6 hours and 30 minutes. The speed of the boat in still water is :

(a)   10 km/h

(b)   4 km/h

(c)   14 km/h

(d)   6km/h

$x \ km/h$

$\underline{speed \ of \ stream}$

$y \ km/h$

$$\frac{24}{x-y} + \frac{28}{x+y} = 6$$

$$Let \quad \frac{1}{x+y} = u \ ; \ \frac{1}{x-y} = v$$

$$\frac{30}{x-y} + \frac{21}{x+y} = 6\frac{1}{2}$$

$$28u + 24v = 6$$

$$21u + 30v = \frac{13}{2}$$

$$28u + 24v = 6 \longrightarrow ①$$

$$21u + 30v = \frac{13}{2} \longrightarrow ②$$

$$14u + 12v = 3 \longrightarrow \times 5$$

$$21u + 30v = \frac{13}{2} \longrightarrow \times 2$$

$$70u + 60v = 15$$

$$42u + 60v = 13$$

$$\frac{\quad\quad\quad\quad}{(-) \quad (-) \quad (-)}$$

$$\frac{\quad\quad\quad\quad}{28u \quad\quad = 2}$$

$$u = \frac{2}{28} = \frac{1}{14}$$

$$14u + 12v = 3$$

$$1 + 12v = 3 \implies v = \frac{2}{12} = \frac{1}{6}$$

$$u = \frac{1}{14} \qquad v = \frac{1}{6}$$

$$\frac{1}{x+y} = \frac{1}{14} \; ; \; \frac{1}{x-y} = \frac{1}{6}$$

$$x+y = 14$$

$$x-y = 6$$

$$x + y = 14 \quad \text{------ Downstream (D)}$$

$$x - y = 6 \quad \text{------ upstream (U)}$$

$$\text{Speed of boat in still water} = \frac{D + U}{2} = \frac{14 + 6}{2} = 10 \ km/h$$

Q) A boat goes 24 km upstream and 28 km downstream in 6 hours. It goes 30km upstream and 21 km downstream in 6 hours and 30 minutes. The speed of the boat in still water is :

(a) 10 km/h   (b) 4 km/h

(c) 14 km/h   (d) 6km/h

Ans: (a)

Q) A train is travelling at 48 km/hour completely crosses another train having half its length and travelling in opposite direction at 42 km/hour in 12 s. It also passes a railway platform in 45 s. What is the length of the platform?

(a) 600 m
(b) 400 m
(c) 300 m
(d) 200 m

Let length of first train

'L' m.

$$12 = \dfrac{L + \dfrac{L}{2}}{(48 + 42) \times \dfrac{5}{18}}$$

$$300 = \dfrac{3L}{2} \implies L = 200 \, m$$

$$45 = \dfrac{200 + L_p}{48 \times \dfrac{5}{18}}$$

$$L_p = \dfrac{\overset{15}{\cancel{45}} \times \overset{8}{\cancel{48}} \times 5}{\underset{\cancel{3}_1}{\cancel{18}}} - 200 = 600 - 200$$

$$= \underline{(400 \, m)}$$

Q) A train is travelling at 48 km/hour completely crosses another train having half its length and travelling in opposite direction at 42 km/hour in 12 s. It also passes a railway platform in 45 s. What is the length of the platform?

(a)　600 m

(b)　400 m

(c)　300 m

(d)　200 m

Ans: (b)

Q) In a flight of 600 km, an aircraft was slowed down due to bad weather. Its average speed for the trip was reduced by 200 km/hr and the time of flight increased by 30 minutes. The duration of the flight is

(a)   1 hour

(b)   2 hours

(c)   3 hours

(d)   4 hours

$v \ km/h$

$$t = \frac{600}{V} \quad - \quad ①$$

$$t + \frac{30}{60} = \frac{600}{V-200}$$

$$\frac{600}{V-200} - \frac{600}{V} = \frac{1}{2}$$

$$600\left(\frac{1}{V-200} - \frac{1}{V}\right) = \frac{1}{2}$$

$$600\left(\frac{1}{v-200} - \frac{1}{v}\right) = \frac{1}{2}$$

$$\frac{200}{v(v-200)} = \frac{1}{1200}$$

$$v(v-200) = 240000$$

$$v^2 - 200v - 240000 = 0$$

$$v^2 - 600v + 400v - 240000 = 0$$

$$v(v-600) + 400(v-600) = 0$$

$$(v+400)(v-600) = 0$$

$$v = -400 \text{ (rejected)}$$

$$v = 600$$

$$1200 \quad 200$$

$$200 \times 600 \qquad 200$$

$$t = \frac{600}{600} = 1 \text{ hr}$$

Q) In a flight of 600 km, an aircraft was slowed down due to bad weather. Its average speed for the trip was reduced by 200 km/hr and the time of flight increased by 30 minutes. The duration of the flight is

(a)   1 hour

(b)   2 hours

(c)   3 hours

(d)   4 hours

Ans: (a)

Q) A thief is noticed by a policeman from a distance of 200 m. The thief starts running and the policeman chases him. The thief and the policeman run at the speed of 10 km/hr and 11 km/hr respectively. What is the distance between them after 6 minutes ?

(a)   100 m

(b)   120 m

(c)   150 m

(d)   160 m

200 m

P ⟶   T ⟶

$\frac{5}{18}$ m/s × 6 × 60 = 100 m

Relative speed = 11 − 10

$= 1$ km/hr $= 1 \times \frac{5}{18}$ m/s

$= \frac{5}{18}$ m/s

Distance between them = 200 − 100 = 100 m

Q) A thief is noticed by a policeman from a distance of 200 m. The thief starts running and the policeman chases him. The thief and the policeman run at the speed of 10 km/hr and 11 km/hr respectively. What is the distance between them after 6 minutes ?

(a)   100 m   (b)   120 m

(c)   150 m   (d)   160 m

Ans: (a)

Q) A man cycles with a speed of 10 km/h and reaches his office at 1 p.m. However, when he cycles with a speed of 15 km/h, he reaches his office at 11 am. At what speed sould he cycle, so that he reaces his office at 12 noon? $\quad\quad$ `$x$` km/h

(a)   12.5 km/h   (b)   12 km/h

(c)   13 km/h   (d)   13.5 km/h

$$\frac{d}{10} - \frac{d}{15} = 2$$

$$d = 2 \times 30 = \underline{60 \ km}$$

$$\frac{d}{10} - \frac{d}{x} = 1$$

$$\frac{60}{10} - \frac{60}{x} = 1$$

$$6 - 1 = \frac{60}{x}$$

$$x = \frac{60}{5} = 12 \ km/h$$

Q) A man cycles with a speed of 10 km/h and reaches his office at 1 p.m. However, when he cycles with a speed of 15 km/h, he reaches his office at 11 am. At what speed sould he cycle, so that he reaces his office at 12 noon?

(a)   12.5 km/h   (b)   12 km/h
(c)   13 km/h   (d)   13.5 km/h

Ans: (b)

Q) The distance between two points (A and B) is 110 km. X starts running from point A at a speed of 60 km/h and Y starts running from point B at a speed of 40 km/h at the same time. They meet at a point C, somewhere on the line AB. What is the ratio of AC to BC ?

(a)   3 : 2

(b)   2 : 3

(c)   3 : 4

(d)   4 : 3
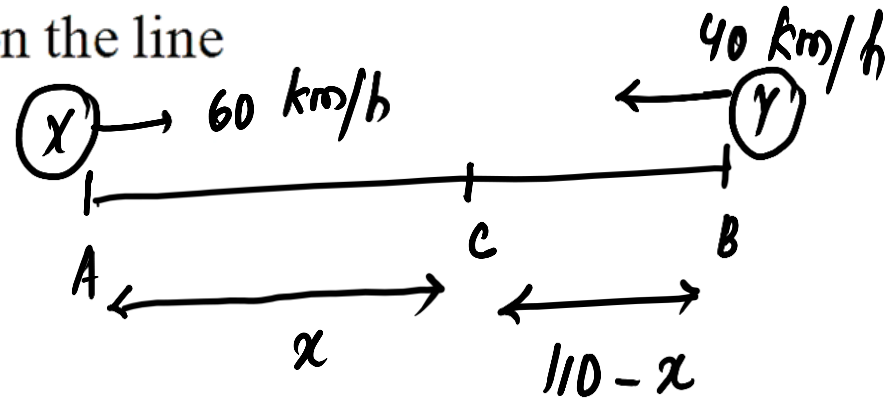
$$\frac{x}{60} = \frac{110-x}{40}$$

(Time taken will be same)

$$40x = 6600 - 60x$$

$$100x = 6600 \Rightarrow x = 66 \text{ km}$$

$$\frac{x}{110-x} = \frac{66}{110-66}$$

$$= \frac{66}{44} = \frac{3}{2} = 3:2$$

Q) The distance between two points (A and B) is 110 km. X starts running from point A at a speed of 60 km/h and Y starts running from point B at a speed of 40 km/h at the same time. They meet at a point C, somewhere on the line AB. What is the ratio of AC to BC ?

(a) 3 : 2

(b) 2 : 3

(c) 3 : 4

(d) 4 : 3

Ans: (a)

Q) A man starts from a place P and reaches the place Q in 7 hours. He travels $1/4^{th}$ of the distance at 10 km/hour and the remaining distance at 12 km/hour. The distance, in kilometre, between P and Q is

(a) 72

(b) 80

(c) 90

(d) 70

Q) A man starts from a place P and reaches the place Q in 7 hours. He travels $1/4^{th}$ of the distance at 10 km/hour and the remaining distance at 12 km/hour. The distance, in kilometre, between P and Q is

(a)   72   (b)   80

(c)   90   (d)   70

Ans: (b)

Q) A train travelling at the speed of x km h crossed a 200 m long platform in 30 seconds and overtook a man walking in the same direction at the speed of 6 km/h in 20 seconds. What is the value of x?

(a) 50   (b) 54   (c) 56   (d) 60

Q) A train travelling at the speed of x km h crossed a 200 m long platform in 30 seconds and overtook a man walking in the same direction at the speed of 6 km/h in 20 seconds. What is the value of x?

(a)   50   (b)   54   (c)   56   (d)   60

Ans: (d)

Q) A man starts from B to K, another from K to B at the same time. After passing each other they complete their journeys in $3\frac{1}{3}$ and $4\frac{4}{5}$ hours, respectively. Find the speed of the second man if the speed of the first is 12 km/hr.

(a)   12.5 kmph

(b)   10 kmph

(c)   12.66 kmph

(d)   20 kmph

Q) A man starts from B to K, another from K to B at the same time. After passing each other they complete their journeys in $3\frac{1}{3}$ and $4\frac{4}{5}$ hours, respectively. Find the speed of the second man if the speed of the first is 12 km/hr.

(a)   12.5 kmph

(b)   10 kmph

(c)   12.66 kmph

(d)   20 kmph

Ans: (b)

Q) A passenger sitting in a train of length 100 m, which is running with speed of 60 km/h passing through two bridges, notices that he crosses the first bridge and the second bridge in time intervals which are in the ratio of 7 : 4 respectively. If the length of first bridge be 280 m, then the length of second bridge is:

(a) 490 m

(b) 220 m

(c) 160 m

(d) Can't be determined

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(a)   490 m

(b)   220 m

(c)   160 m

(d)   Can't be determined

Ans: (c)

Q) A train after travelling 150 km meets with an accident and then proceeds with 3/5 of its former speed and arrives at its destination 8 h late. Had the accident occurred 360 km further, it would have reached the destination 4 h late. What is the total distance travelled by the train?

(a) 840 km

(b) 960 km

(c) 870 km

(d) 1100 km

Q) A train after travelling 150 km meets with an accident and then proceeds with 3/5 of its former speed and arrives at its destination 8 h late. Had the accident occurred 360 km further, it would have reached the destination 4 h late. What is the total distance travelled by the train?

(a) 840 km

(b) 960 km

(c) 870 km

(d) 1100 km

Ans: (c)