21. A man covered a certain distance at some speed. If he had moved 3 km/hr. faster, he would have taken 40 minutes less. If he had moved 2 km/hr. slower, he would have taken 40 mins more. The distance (in kms) is-

(1) 35 (2) $36\frac{2}{3}$

(3) $37\frac{1}{2}$ (4) 40

22. A car travels the first one-third of a certain distance with a speed of 10km/hr. the next one-third distance with a speed of 20km/hr. and the last one-third distance with a speed 60km/hr. Then the average speed of the car for the whole Journey is-

(1) 18 km/hr. (2) 24 km/hr.
(3) 30 km/hr. (4) 36 km/hr.

23. A man on tour travels first 160 kms at 64km/hr and the next 160kms at 80 kms/hr. The average for the first 320 kms of the tour is -

(1) 35.55 km/hr. (2) 36 km/hr.
(3) 71.11 km/hr. (4) 71 km/hr.

24. A farmer travelled a distance of only 61 km. in 9 hours. He travelled partly on foot at 4 kms/hr and partly on bicycle at 9 kms/hr. The distance travelled on foot is-

(1) 14 km (2) 15 km
(3) 16 km (4) 17 km

25. A person has to cover a distance of 6 km in 45 min. If he covers one half of the distance in two-third of the total time then to cover the remaining distance in the remaining time, his speed must be-

(1) 6 km/hr (2) 8 km /hr
(3) 12 km /hr (4) 15 km/hr

26. A person travels equal distance with speed of 3kms/hr, 4kms/hr and 5kms/hr and takes a total time of 47min. The total distance (in kms) is -

(1) 2 (2) 3
(3) 4 (4) 5

27. The distance between two cities A and B is 330 kms. A train starts from A at 8 am and travels towards B at 60 kms/hr. Another train starts from B at 9 am and travels towards A at 75 kms/hr. At what time do they meet ?

(1) 10 am (2) 10:30 am
(3) 11 am (4) 11:30 am

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

(1) 1 hr (2) 2 hrs.
(3) 3 hrs. (4) 4 hrs.

29. A walks around a circular field at the rate of one round/hour, while B runs around it at the rate of six rounds/hour. They starts in the same direction from the same point at 7:30 am. They shall first cross each other at-

(1) 7: 42 am (2) 7:48 am
(3) 8:10 am (4) 8:30 am

30. Two cars P and Q start at the same time from A and B which are 120km apart. If the two cars travel in opposite directions, they meet after one hour and if they travel in the same direction (from A towards B) P meets Q after 6 hours. What is the speed of the car P?

(1) 60 km/hr.
(2) 70 km/hr.
(3) 120 km/hr.
(4) Date inadequate

31. A person travels from P to Q at a speed of 40km./hr and returns by increasing his speed by 50%. What is his average speed for both the trips?
(1) 36km/hr. (2) 45km/hr.
(3) 48 km/hr. (4) 50km/hr.

32. A car travelling at 5/7 of its actual speed covers 42 km in 1hour 40 mins. 48 second. Find the actual speed of the car?
(1) $17\frac{6}{7}$ km/hr. (2) 25km/hr.
(3) 35 km/hr. (4) 30km/hr.

33. Walking at 6/7th of his usual speed, a man is 12 minutes late. The usual time taken by him to cover that distance is-
(1) 1hr.
(2) 1 hrs. 12min.
(3) 1hr. 15min
(4) 1hr. 20min.

34. A man can reach a certain place in 30hrs. If he reduces his speed by 1/15th, he covers 10km less in that time. Find his speed.
(1) 4 km/hr. (2) 5 km/hr.
(3) $5\frac{1}{2}$ km/hr (4) 6 km/hr.

35. In covering a certain distance, the speeds of A and B are in the ratio of 3 : 4. A takes 30 minutes more than B to reach the destination. The time taken by A to reach the destination is-
(1) 1hr. (2) $1\frac{2}{1}$ hr.
(3) 2hr. (4) $2\frac{1}{2}$ hr.

36. The speed of a car increases by 2 km/hr after every hour. If the distance travelled in the first one hour was 35 km, the total distance travelled in 12 hours was-
(1) 456 km (2) 482 km
(3) 552 km (4) 556 km

37. Sound travels 330 metres per second. If the sound of a thunder cloud follows the flash after 10 seconds, the thunder cloud is at a distance of -
(1) 3.7km (2)3.5km
(3) 3.3km (4) 3.7km

38. A and B are two towns. A car goes from A to B at a speed of 64km/hr. and returns to A at a slower speed. If its average speed for the whole Journey is 56km/hr, it returned with speed of -
(1) 52.54 km/hr.
(2) 47.74 km/hr.
(3) 49.78 km/hr.
(4) 49.87 km/hr.

39. Without any stoppage a person travels a certain distance at an average speed of 42km/hr. and with stoppage he covers the same distance at an average speed of 28 km/hr. How many minutes per hour does he stop?
(1) 20 min. (2) 30 min.
(3) 21 min. (4) 23 min.

40. Excluding stoppage, the speed of a bus is 54kms/hr and including stoppage, it is 45 kms/hr. For how many minutes does the bus stop per hour.?
(1) 9 (2) 10
(3) 12 (4) 20

Answers with explanations

1.2; Let the distance be x km

Average speed

$$= \frac{\text{total distance travelled}}{\text{total time taken}} = \frac{x+x}{\frac{x}{S_1}+\frac{x}{S_2}}$$

as $T = \frac{D}{S}$

$$\Rightarrow \frac{x+x}{\frac{x}{60}+\frac{x}{40}} = \frac{2x}{\frac{2x+3x}{120}} = \frac{x \times 2 \times 120}{5x}$$

$= 48$ kms/hr.

1.2; **Short Trick :-**

Average speed $= \frac{2xy}{x+y} \Rightarrow \frac{2\times60\times40}{100}$

$= 48$ km/hr.

2.1; Let distance $= x$

$$\text{Time} = \frac{D}{S}$$

$$7 = \frac{x/2}{30} + \frac{x/2}{40}$$

$$7 = \frac{x}{60} + \frac{x}{80}$$

$$7 = \frac{4x+3x}{240}$$

$$7 = \frac{7x}{240}$$

$x = 240$ kms

3.1; (i) When they walk in the same direction, the relative speed of y with respect to x is (6 - 5) i.e. 1km/hr. (Because the journey is in same direction)

After 4 hours they will be $4\times1 = 4$ km apart.

(ii) In opposite direction, Both the speed are added.

So, relative speed (6 + 5) = 11km/hr.

After 4 hours they will be 11×4 = 44 kms apart

4.2; During the first 10 seconds, the thief has covered $10\text{m/s}\times10 = 100$ meter

The time required by the policeman to cover 100 metre is-

$$\frac{100}{(12.5-10)} = 40 \text{ seconds}$$

↓

Relative speed (substracted when movement is in the same direction)

The policeman will catch the thief at a distance of $12.5\text{m/s} \times 40$ sec

$(D = S \times T)$

$= 500$ metres

5.1; Let the distance be x km.

Time taken by the first person

$$= \frac{D}{S} = \frac{x}{25} \text{ hr.}$$

Time taken by the second person

$$= \frac{x}{30} \text{ hr.}$$

$T_1 - T_2 = 25$ mins. (given)

$$\frac{x}{25} - \frac{x}{30} = \frac{25}{60}$$

$$\frac{6x-5x}{150} = \frac{5}{12} \Rightarrow x = 62.5 \text{ kms}$$

5.1; **Short Trick:-**

Required distance $= \frac{S_1 \times S_2}{S_1 \square S_2} \times (t_1 \sqcup t_2)$

$$\Rightarrow \frac{25\times30}{30-25} \times \frac{25}{60} \Rightarrow 62.5 \text{ km}$$

6.3; Let the total distance be x km

Time taken at 60kms/hr.

$$= \frac{D}{S} = \frac{x}{60} \text{ hrs.}$$

$= \frac{3x-2x}{120} = \frac{x}{120}$ hour

Rest/hour $= \frac{x}{120} \div \frac{x}{40} \Rightarrow \frac{x}{120} \times \frac{x}{40}$

$= \frac{1}{3}$ hr. i.e. 20 min.

6.3; **Short trick:-**

Time of rest/hour

$$= \frac{S_1 - S_2}{\text{Speed without stoppage}}$$

$\Rightarrow \frac{60 - 40}{60} = \frac{20}{60} = \frac{1}{3}$ hrs. means 20 min.

7.1; The first bus has moved (30 × 5) kms before the second bus starts after 5 hrs. (3pm -10am) and the second bus gains (40 - 30) or 10km/hr.

The second bus will gain 30 ×5 km in $\frac{30 \times 5}{10}$ or 15 hours $\left(t = \frac{D}{S} \Rightarrow \frac{30\times5}{10}\right)$

∴ Required distance from trivandrum T × S = 15hrs.× 40 km/hr. = 600km

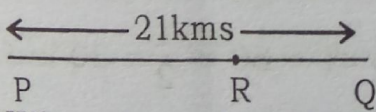
7.1; **Short Trick:-**

$$\frac{S_1 \times S_2}{\text{Difference in speed}} \times \text{diff. in time}$$

Req. dist. $= \frac{30 \times 40 \times 5}{40 - 30}$ (3pm-10am)

= 600km (15'o' clock-10'o'clock)

8.4;



When A reaches R, B also reaches R After returning from Q.

∴ Distance travelled by A = PR

∴ Distance travelled by B = PQ + QR

Distance travelled by A and B

8.4; **Short trick:-**

Distance travelled by A = 2 × distance between two points $\times \left(\frac{a}{a+b}\right)$

$= 2 \times 21 \times \frac{3}{7} = 18$ km.

9.(3) Ratio of speeds = $\sqrt{a} : \sqrt{b}$

$= \sqrt{\frac{1}{2}} : \sqrt{2}$

$S_1 : S_2 = \left(\sqrt{\frac{1}{2}} : \sqrt{2}\right) \times \sqrt{2}$

$\Rightarrow \frac{\sqrt{2}}{\sqrt{2}} : \sqrt{2} \times \sqrt{2} = 1 : 2$

$S_1 : S_2 = 1 : 2$ (because S_1= 40 km/hr.)

$\Rightarrow$ If 1 = 40

then, 2 = 80; ∴ S_2 = 80 km/hr.

10.3; Speed and time are inversely proportional.

$S_1 t_1 = S_2 t_2$

So, $45 \times 40 = S_2 \times 30$

$S_2 = \frac{45\times40}{30} = 60$km/hr.

11.4; Speed in m/s $= \frac{600}{5\times60} = 2$m/s

or $2 \times \frac{18}{5} = \frac{36}{5} \Rightarrow 7\frac{1}{5}$ km/hr.

12.2; Walking + Riding = 6 hours 30 min.

2 Riding = 6 hours 30min. - 2 hours 10 min.

2 Riding = 4 hours 20 min._____(i)

We know that-

2 (walking + Riding) = (6hr.30 min.)2

2 walking + 2 Riding = 13 hrs. __(ii)

Subtract equation (i) from (ii)

2 walking = 13 hr. - 4hr. 20 min.

8 hours 40 min. or 520 mins.

13.2. Let the distance be x km.
$x/2$ km. at the rate of 21 kms./hr.
and $x/2$ km at 24kms./hr.
Total time taken

$$= \frac{x}{2\times21} + \frac{x}{2\times24} = 10 \text{ hr.}$$

$x = 224$ km.

14.3; Let the distance be x km.

$$\frac{x}{4} - \frac{x}{6} = (15+10) \text{ min.}$$

$$\frac{3x-2x}{12} = \frac{25}{60} \text{ hrs.}$$

$x = 5$ km

Short Trick:-
Distance =

$$\frac{\text{Product of two speed}}{\text{Difference of two speed}} \times \text{difference in time}$$

$$\frac{4\times6}{6-4} \times \frac{(15+10)}{60} = 5 \text{ kms.}$$

15.4; $D_1 = 20 \times T_1$
$D_2 = 25 \times T_2$
$D_2 - D_1 = 80$ kms
$T_1 = T_2$ (both travel for the same time)
$25T_1 - 20T_1 = 80$
$5T_1 = 80$

$$T_1 = \frac{80}{5} = 16 \text{ kms.}$$

$D_2 = 25 \times 16 = 400$ kms.
$D_1 = 320$ kms.
Total distance = 400 + 320
= 720 kms.

15.4; **Short Trick**:-
Distance between two bus stations = Distance travelled more by one bus $\times \frac{\text{Sum of speed}}{\text{Difference of speed}}$

$$80 \times \left(\frac{25+20}{5}\right) = 720 \text{ km}$$

16.3; Let the distance be x km.

$$\frac{x}{25} + \frac{x}{4} = 5\frac{4}{5}\left(5\frac{48}{60}\right)$$

$$\frac{4x+25x}{100} = \frac{29}{5}$$

$x = 20$ km

17. Relative speed of the policeman with respect to thief = 12 - 10
= 2 km/hr.

$$\therefore \text{Time} = \frac{D}{S} \Rightarrow \frac{200\text{m}}{2km/hr.} = \frac{200\times18}{2\times5}$$

= 360 seconds or $\frac{1}{10}$ hr.

The distance thief had run before he was caught by the policeman

$$10 \times \frac{1}{10} = 1 \text{ km.}$$

18.4; $D_1 = S_1T_1$
$D_2 = S_2T_2$
$S_1T_1 - S_2T_2 = 100$
$T_1 = T_2$
$50 \times T_1 - 40T_1 = 100$
$10T_1 = 100$
$T_1 = 10$ hrs.
$D_1 = S_1T_1 = 50 \times 10$
$D_1 = 500$ kms.
$D_2 = 400$ kms.
Total distance = $D_1 + D_2$
= 900 kms.

18.4; **Short Trick:-**
Distance between P and Q = Distance travelled more by one train $\times \frac{\text{Sum of speeds}}{\text{Difference of speed}}$

$$\therefore 100 \times \left[\frac{50+40}{50-40}\right]$$

$$100 \times \frac{90}{10} = 900 \text{ km.}$$

19.3; Relative speed of owner with respect to thief = 75 - 60 = 15 km/hr.
The distance covered by thief in 30 min. = $S \times T = 60 \times \frac{1}{2} = 30$ km.

$\therefore$ Owner will overtake thief in $\frac{30}{15}$ = 2 hrs.

$\therefore$ He will overtake thief at (3pm + 2hr.) = 5pm.

19.3; **Short cut:-**

$$\text{Required time} = \frac{S_2 \times \text{Difference in time}}{S_1 - S_2}$$

$$\therefore \frac{60 \times \frac{1}{2}}{75-60} = 2 \text{ hrs.}$$

20.2; Let the distance be x km.

initial speed $= \frac{x}{8}$ km/hr..

It is increased by 4 km/hr.

$$\therefore D = \left(\frac{x}{8}+4\right) \times 7\frac{1}{2} \quad (\text{as } D = S \times T)$$

$x = 480$ km.

21.4; Let the distance be x km. and usual speed a km/hr.

$$T = \frac{D}{S_1} - \frac{D}{S_2}$$

$$\frac{x}{a} - \frac{x}{a+3} = \frac{40}{60}$$

$$\frac{[a+3-a]}{a(a+3)} = \frac{2}{3}$$

$9x = 2a\,(a+3)$ _____(i)

Similarly

$$\frac{x}{a-2} - \frac{x}{a} = \frac{40}{60}$$

$$\frac{2x}{a(a-1)} = \frac{2}{3}$$

$3x = a\,(a-2)$ _____(ii)

Dividing equation. (i) by (ii)

$$3 = \frac{2(a+3)}{a-2}$$

$a = 12$km/hr.

$$\therefore \text{Distance} = \frac{12 \times (12-2)}{3} = 40\text{km/hr.}$$

22.1; Let the distance covered by car be $3x$ km

Average speed $= \frac{\text{total distance travelled}}{\text{total time taken}}$

$$= \frac{3x}{\frac{x}{10}+\frac{x}{20}+\frac{x}{60}}$$

$$= \frac{3x}{\frac{6x+3x+x}{60}}$$

$$= \frac{3x \times 60}{10x} = 18 \text{ km/hr.}$$

22.1; **Short trick**:-

$$\text{Average speed} = \frac{3xyz}{xy+yz+zx}$$

$$= \frac{3 \times 10 \times 20 \times 60}{200+1200+600}$$

$$\Rightarrow \frac{3 \times 10 \times 20 \times 60}{2000} = 18 \text{ km/hr}$$

23.3; Average speed $= \frac{160+160}{\frac{160}{64}+\frac{160}{80}}$

$$= \frac{320}{\frac{20}{8}+2} \Rightarrow \frac{320}{9} \times 2 = 71.11\text{km/hr.}$$

23.3; **Short trick:-**

$$\text{Average speed} = \frac{2xy}{x+y}$$

$$\frac{2 \times 64 \times 80}{64+80} = 71.11\text{km/hr.}$$

24.3; Let the distance travelled by foot be x km and therefore distance by bicycle = $(61-x)$km

$$\frac{61-x}{9} + \frac{x}{4} = 9$$

$$\Rightarrow 5x + 9x = 324 - 244$$

$$x = 16 \text{ km}$$

25.3; Total distance 6kms and total time 45 min.

Half distance → 3km

$\frac{2}{3}$ rd of the time → 30min. → $\frac{1}{2}$ hr.

speed $= \frac{3}{\frac{1}{2}}$ or 6 km/hr.

Next, 3 kms distance must be covered in 15mins i.e. $\frac{1}{4}$ hr.

Let the increased speed be x km/hr.

$\therefore \quad \frac{3}{6+x} = \frac{1}{4} \Rightarrow x = 6$ km/hr.

For remaining distance his speed must be (6 + 6) = 12 km/hr.

26.2; Let the total distance be $3x$ km.

$$\frac{x}{3}+\frac{x}{4}+\frac{x}{5}=\frac{47}{60}$$

$$\frac{20x+15x+12x}{60}=\frac{47}{60}$$

$x = 1$

$\therefore$ total distance = 3 km

27.3; Distance travelled by train from A from 8 am to 9am = 60 km.

Distance between two trains at 9am = 330 - 60 = 270 km

Relative speed of second train with respect to first = 75 + 60
= 135 km/hr.

Time taken by them to meet $= \frac{D}{S}$

$= \frac{270}{135} = 2$ hrs.

At 11am both the trains will meet.

28.1; Let the duration of flight be t hours.

$S = \frac{D}{T}$

$S_1 - S_2 = 200$ kms/hr.

$$\frac{600}{t}-\frac{600}{t+\frac{1}{2}}=200$$

$$\frac{600}{t}-\frac{2\times600}{2t+1}=200$$

$(2t+1)\,600 - t \times 1200 = 200t\,(2t+1)$

$3\,(2t+1) - 6t = t\,(2t+1)$

$6t+3 - 6t = 2t^2 + t$

$2t^2 + t - 3 = 0$

$2t^2 + 3t - 2t - 3 = 0$

$t\,(2t+3) - 1(2t+3)$

$(2t+3)\,(t-1) = 0$

$t = 1$ hour.

Short trick:-
This type of questions must always be solved through options.

29.1; Relative speed of B with respect to A
= (6 -1) rounds /hr.
= 5 round/hr.

$\therefore$ Time taken to complete one round = 12 min.

$\therefore$ They will meet for the first time after 12 min.

$\therefore$ 7 : 30 + 12 mins.
= 7 : 42 am

30.2; Relative speed of P with respect to Q = 120 km/hr.

$U + V = \frac{120}{1} = 120$ _____(i)

Relative speed of P with respect to Q when they are in same direction

$U - V = \frac{120}{6} = 20$ _____(ii)

From equ. (i) and (ii)

$2U = 140$

$U = 70$ km/hr.

31.3; If there is 50% increase in 40 kms/hr

then $40 \times \frac{150}{100} = 60$ km/hr.

Average speed $= \frac{2x \times y}{x + y}$

$\therefore \frac{2 \times 40 \times 60}{100} = 48$ kms/hr.

32.3; $\frac{42\text{km.}}{1\text{hr.}40\text{min.}48\text{sec}} = \frac{5}{7}$ of actual speed

Actual speed $= \frac{42 \times 7}{5 \times (1\text{hr.}\,40\text{min.}\,48\text{ sec.})}$

$= \frac{42 \times 7}{5\text{hr.}\,200\text{min.}\,4\text{ min}}$

$= \frac{7 \times 42}{8\text{hr.}\,24\text{ min.}} = \frac{7 \times 42}{8\frac{24}{60}} = \frac{7 \times 42}{42/5}$

$= \frac{7 \times 42 \times 5}{42} = 35$ kms/hr.

33.2; **Short trick:-**

$\frac{x}{x \sim y} \times t$

$= \frac{6}{(7-6)} \times 12 = 72$min.

$\Rightarrow$ 1 hr. 12 min.

33.2; **Paramount Concept:-**

$\frac{42}{\frac{6}{7}s} - \frac{42}{s} = \frac{12}{60}$

$\frac{7 \times 42}{6s} - \frac{42}{s} = \frac{1}{5}$

$\frac{7 \times 42 - 6 \times 42}{6s} = \frac{1}{5}$

$\frac{42}{6s} = \frac{1}{5}$

S = 35 km/hr.

34.2; **Paramount Concept:-**

$D_1 - D_2 = 10$ kms.

$S_1 T_1 - S_2 T_2 = 10$ kms.

$S_1 \times 30 - \frac{14}{15} S_1 \times 30 = 10$

$30S_1 - \frac{14\,S_1}{15} \times 30 = 10$

$\frac{30(15S_1 - 14S_1)}{15} = 10$

$2S_1 = 10$

$S_1 = 5$ km/hr.

35.3; Let time taken by A be x hours.

Let time taken by B $= \left(x - \frac{1}{2}\right)$ hr.

Distance covered by A $= 3k \times x$ ___(i)

Distance covered by B $= 4k\left(x - \frac{1}{2}\right)$ _(ii)

From equ. (i) and (ii)

$3k \times x = 4k \times \left(x - \frac{1}{2}\right)$

$3x = 4\left(x - \frac{1}{2}\right)$

$x = 2$hrs.

35.3; **Paramount Concept:-**

$S_A : S_B = 3 : 4$

$T_A : T_B = 4 : 3$ (as $S \propto \frac{1}{T}$)

Difference between T_A & T_B = 1hr.

If 1 = 30 min. (In 4 : 3, 4 - 3 = 1)

Then 4 = 120 min. $\begin{pmatrix} as & A & : & B \\ & \downarrow & & \downarrow \\ & 4 & : & 3 \end{pmatrix}$

i.e. 2 hours.

36.3;Total distance travelled is 12hr.
35 + 37 + 39 + ... up to 12hr.
Now the terms are in AP

$$S_n = \frac{n}{2}[2a+(n-1)d]$$

where n is the number of terms and d is the difference between two terms.

$$\frac{12}{2}[2\times35+11\times2]$$

= 552 kms.

37.3; Distance of thunder cloud = distance travelled by sound in 10second
(330×10) metres = 3.3km.

38.3; Average speed = $\frac{2xy}{xy}$

$$56 = \frac{2\times64\times y}{64+y}$$

$$7(64+y) = 16y$$

x = 49.78 km/hr.

39.1; Here x = 42 and y = 28

$$\therefore \text{ Stoppage time/hr.} = \frac{x-y}{x}$$

$$\Rightarrow \frac{42-28}{42} \Rightarrow \frac{1}{3}\text{ hr.} \Rightarrow 20\text{ min.}$$

40. Due to stoppage, it covers 9km less per hour.

$$\text{Stoppage} = \frac{\text{difference in speed}}{\text{speed without stoppage}}$$

$$= \frac{(54-45)}{54} = \frac{1}{6}\text{ hr.} = 10\text{ mins.}$$

Exercise

1. Starting from his house one day, a student walks at a speed of 2¼ km/hr and reaches his school 6 minutes late. Next day at the same time he increases his speed by 1 km/hr and reaches the school 6 minutes early. How far is the school from his house?
(1) 2 km (2) $1\frac{1}{2}$ km
(3) 1 km (4) $1\frac{3}{4}$ km
(5) None of these

2. A man travelled a certain distance by train at the rate of 25 km/hour and walked back at the rate of 4 km per hour. If the whole journey took 5 hours 48 minutes, the distance was
(1) 25 km (2) 30 km
(3) 20 km (4) 15 km
(5) None of these

3. A starts from a place P to go to a place Q. At the same time B starts from Q for P. If after meeting each other A and B took 4 and 9 hours more respectively to reach their destinations, the ratio of their speeds is
(1) 3 : 2 (2) 5 : 2
(3) 9 : 4 (4) 9 : 13
(5) None of these

4. A truck covers a distance of 550 metres in 1 minute whereas a bus covers a distance of 33 km in 45 minutes. The ratio of their speeds is
(1) 4 : 3 (2) 3 : 5
(3) 3 : 4 (4) 50 : 3
(5) None of these

5. A man covers a certain distance by car driving at 70 km/hr and he returns to the starting point riding on a scooter at 55 km/hr. Find his average speed for the whole journey.
(1) 61.6 km/hr (2) 62.8 km/hr
(3) 63.6 km/hr (4) 64.6 km/hr
(5) None of these

6. A man covers a certain distance between his house and office on scooter. Having an average speed of 30 km/hr, he is late by 10 min. However, with a speed of 40 km/hr, he reaches his office 5 min earlier. Find the distance between his house and office.
(1) 20 km (2) 25 km
(3) 30 km (4) 35 km
(5) None of these

7. A man walking at a speed of 5 km/hr reaches his target 5 minutes late. If he walks at a speed of 6 km/hr, he reaches on time. Find the distance of his target from his house.
(1) 2.3 km (2) 2.5 km
(3) 2.4 km (4) 2.6 km
(5) None of these

8. A boy walking at a speed of 10 km/hr reaches his school 15 minutes late. Next time he increases his speed by 2 km/hr, but still he is late by 5 minutes. Find the distance of his school from his house.
(1) 10 km (2) 15 km
(3) 20 km (4) 25 km
(5) None of these

9. A boy goes to school at a speed of 3 km/hr and returns to the village at a speed of 2 km/hr. If he takes 5 hrs in all, what is the distance between the village and the school?
(1) 2 km (2) 4 km
(3) 6 km (4) 8 km
(5) None of these

10. A motor car does a journey in 10 hrs, the first half at 21 km/hr and the second half at 24 km/hr. Find the distance
(1) 224 km (2) 225 km
(3) 226 km (4) 228 km
(5) None of these

11. Running 4/3 of his usual speed, a person improves his timing by 10 minutes. Find his usual time to cover the distance.
(1) 40 min (2) 45 min
(3) 46 min (4) 48 min
(5) None of these

12. Two men A and B starts from a place P walking at 3 km and 3.5 km an hour respectively. How many kms will they be apart at the end of 3 hrs, if they walk in opposite directions?
(1) 13.5 km (3) 15.5 km
(3) 17.5 km (4) 19.5 km
(5) None of these

13. Two men A and B walk from P to Q, a distance of 21 km, at 3 and 4 kms an hour respectively. B reaches Q, returns immediately and meets A at R. Find the distance from P to R.
(1) 12 km (2) 14 km
(3) 16 km (4) 18 km
(5) None of these

14. Two guns were fired from the same place at an interval of 13 minutes but a person in a train approaching the place hears the second firing 12 minutes 30 seconds after the first. Find the speed of the train, supposing that sound travels at 330 metres per second.
(1) $47\frac{13}{25}$ km (2) $45\frac{13}{25}$ km
(3) $42\frac{13}{25}$ km (4) $44\frac{25}{13}$ km
(5) None of these

15. A monkey tries to ascend a greased pole 14 metres high. He ascends 2 metres in first minute and slips down 1 metre in the second minute. If he continues to ascend in this fashion, how long does he take to reach the top?
(1) 24 min (2) 26 min
(3) 28 min (4) 32 min
(5) None of these

16. Two runners cover the same distance at the rate of 15 km/hr. and 16 km per hours respectively. Find the distance travelled when one takes 16 minutes longer than the other.
(1) 60 km (2) 62 km
(3) 64 km (5) 68 km
(5) None of these

17. A person has to cover a distance of 80 km in 10 hrs. If he covers half of the journey in $\frac{3}{5}$ time, what should be his speed to cover the remaining distance in the time left?
(1) 6 km/hr (2) 8 km/hr
(3) 10 km/hr (4) 12 km/hr
(5) None of these

18. A man travels 360 km in 4 hrs, partly by air and partly by train. If he had travelled all the way by air, he would have saved $\frac{4}{5}$ of the time he was in train and would have arrived at his destination 2 hours early. Find the distance he travelled by air and train.
(1) 90 km, 270 km
(2) 95 km, 275 km
(3) 94 km, 282 km
(4) 92 km, 292 km
(5) None of these

19. A man travelled a certain distance by train at the rate of 25 km per hour and walked back at the rate of 4 km per hour. The whole journey took 5 hours and 48 minutes. What distance did he travel by train?
(1) 10 km (2) 15 km
(3) 18 km (4) 20 km
(5) None of these

20. One aeroplane started 30 minutes later than the scheduled time from a place 1500 km away from its destination. To reach the destination at the scheduled time the pilot had to increase the speed by 250 km/hr. What was the speed of the aeroplane per hour during the journey?
(1) 650 km/hr (2) 750 km/hr
(3) 850 km/hr
(4) Can't be determined
(5) None of these

21. A person travelled 120 km by steamer, 450 km by train and 60 km by horse. The total journey took 13 hours 30 minutes. If the rate of the train is 3 times that of the horse and 1.5 times that of the steamer, find the rate of the train per hour.
(1) 60 km/hr (2) 65 km/hr
(3) 70 km/hr (4) 75 km/hr
(5) None of these

22. A man covers a certain distance on scooter. Had he travelled 3 kmph faster, he would have taken 40 minutes less. If he had moved 2 kmph slower, he would have taken 40 minutes more. Find the distance (in km) and original speed.
(1) 20 km, 15km/h
(2) 30 km, 14km/h
(3) 40 km, 12km/h
(4) Can't be determined
(5) None of these

23. From two places, 60 km apart, A and B start towards each other at the same time and meet each other after 6 hours. Had A travelled with $\frac{2}{3}$ of his speed and B travelled with double of his speed, they would have met after 5 hours. The speed of A is
(1) 4 km/hr (2) 6 km/hr
(3) 10 km/hr (4) 12 km/hr
(5) None of these

24. A, B and C start together from the same place to walk round a circular path of length 12 km. A walks at the rate of 4 km/hr., B at the rate of 3 km/hr and C at the rate of $\frac{3}{2}$ km/hr. They will meet together at the starting place at the end of
(1) 10 hrs (2) 12 hrs
(3) 15 hrs (4) 24 hrs
(5) None of these

25. Ravi and Ajay start simultaneously from the same place A for B, 60 km apart. Ravi's speed is 4 km/hr less than that of Ajay. Ajay, after reaching B, returns and meets Ravi at a place 12 km away from B. Ravi's speed is
(1) 12 km/hr (2) 10 km/hr
(3) 8 km/hr (4) 6 km/hr
(5) None of these

26. What is the length of the bridge which a man riding 15 km an hour can cross in 5 minutes?
(1) 850 m (2) 1050 m
(3) 1250 m
(4) Can't be determined

27. A man takes 6 hrs. 30 min. in walking to a certain place and riding back. He would have saved 2 hrs. 10 min. by riding both ways. How long would he take to walk both ways?
(1) 4 hrs 30 min
(2) 6 hrs 40 min
(3) 8 hrs 40 min
(4) 10 hrs 30 min
(5) None of these

28. Two boys begin together writing out a booklet containing 8190 line. The first boy starts with the first line, writing at the rate of 200 lines an hour; and the second boy starts with the last line, then writes 8189th line and so on, proceeding backward at the rate of 150 line an hour. At what line will they meet?
(1) 4680 (2) 4850
(3) 5860 (4) 6850
(5) None of these