TSD - 1

Career Launcher

QA - 07

CEX-Q-0208/18

Contents

- Proportionality
- Average Speed

Number of Questions : 30

Proportionality

1. The speeds of a scooter, a car and a train are in the ratio 1 : 4 : 16. If all of them cover equal distance, the ratio of time taken by each of the vehicle is: **(SNAP 2011)**
(1) 256 : 16 : 1 (2) 1 : 4 : 16
(3) 16 : 4 : 1 (4) 16 : 1 : 4

2. By walking at 4/5th of his usual speed, a man reaches office 10 minutes later than usual. What is the usual time taken by the man to reach office? **(SNAP 2011)**
(1) 30 min (2) 40 min
(3) 35 min (4) 50 min

3. Walking at $\frac{3}{4}$ of his normal speed, Bharat takes 45 minutes more than the normal time to reach the office. Find his normal time.
(1) $2\frac{1}{4}$hr (2) 2 hr
(3) 4 hr (4) 1.5 hr

4. A train travelling 100 km at x km/hr, arrives at its destination 1 hr late. What should have been the speed (in km/hr) for it to arrive on time?
(1) $\frac{100x}{(100+x)}$ (2) $\frac{100-x}{100x}$
(3) $\frac{100x}{(100-x)}$ (4) None of these

5. If a man walks from his house at 5 km/ hr, he reaches office 5 minutes late. If he walks at 6 km/hr, he reaches 5 minutes early. Then the distance from his house to the office is
(1) 3 km (2) 4km
(3) 5 km (4) 6km

6. A train travels at a uniform speed of 15 km/hr. If the speed had been 10 km/hr more, it would have taken 8 hours less to cover the distance between stations A and B. What is the distance (in km) between A and B?
(1) 100 (2) 300
(3) 250 (4) 200

7. If a man cycles at 10 km/hr, then he arrives at a certain place at 1 p.m. If he cycles at 15 km/hr from the same starting point, he will arrive at the same destination at 11 a.m. At what speed must he cycle to get there at noon?
(1) 11 km/hr (2) 12 km/hr
(3) 13 km/hr (4) 14 km/hr

8. A Porsche has to cover 928 km in 10 hrs. If it covers first half of the journey in $\frac{3}{5}$ th of the total time, what should be its speed for the remaining journey so as it covers the entire journey in a specified time?
(1) 124 km/hr (2) 164 km/hr
(3) 116 km/hr (4) 120 km/hr

9. A man leaves a point P at 6 a.m. and reaches the point Q at 10 a.m. Another man leaves the point Q at 8 a.m. and reaches the point P at 12 noon. At what time do they meet if they travel at a constant speed?
(1) 9 a.m. (2) 10 a.m.
(3) 8.30 a.m. (4) 9 p.m.

10. A man travels three-fifths of the total distance from A to B at a speed 3a, and the remaining at a speed 2b. If he goes from B to A and returns at a constant speed 5c in the same time, then which of the following is true
(1) $\frac{1}{a}+\frac{1}{b}=\frac{1}{c}$ (2) a + b = c
(3) $\frac{1}{a}+\frac{1}{b}=\frac{2}{c}$ (4) None of these

11. A wheel rotates 10 times in a minute and moves 20 ft forward in each rotation. How much time does the wheel take if it moves 970 ft forward?
(1) 2 min (2) 4.85 min
(3) 48.5 min (4) 9.7 min

12. A train approaches a tunnel AB. Inside the tunnel is a cat located at a point that is 3/8 of the distance AB measured from the entrance A. When the train whistles the cat runs. If the cat moves to the entrance of the tunnel A, the train catches the cat exactly at the entrance. If the cat moves to the exit B, the train catches the cat at exactly the exit. What is the ratio of the speed of the train to that of the cat? **(CAT 2002)**
(1) 3 : 1 (2) 4 :1
(3) 5 : 1 (4) None of these

13. A truck travelling at 70 km/hr uses 30% more diesel to travel a certain distance than it does when it travels at a speed of 50 km/hr. If the truck can travel 19.5 km/L of diesel at 50 km/hr, how far can the truck travel on 10 L of diesel at a speed of 70 km/hr? **[CAT 2000]**
(1) 130 km (2) 140 km
(3) 150 km (4) 175 km

14. The speed of a railway engine is 42 kmph when no compartment is attached, and the reduction in speed is directly proportional to the square root of the number of compartments attached. If the speed of the train carried by this engine is 24 kmph when 9 compartments are attached, then the maximum number of compartments that can be carried by the engine is **[CAT 1999]**
(1) 49 (2) 48
(3) 46 (4) 47

15. Train X departs from station A at 11 a.m. for station B, which is 180 km away from A. Train Y departs from station B at 11 a.m. for station A on the same day. Train X travels at an average speed of 70 km/hr and does not stop anywhere until it arrives at station B. Train Y travels at an average speed of 50 km/hr, but has to stop for 15 minutes at station C, which is 60 km away from station B enroute to station A. Ignoring the lengths of the trains, what is the distance, to the nearest integer kilometre, from station A to the point where the trains cross each other? **[CAT 2001]**
(1) 112 km (2) 118 km
(3) 120 km (4) None of these

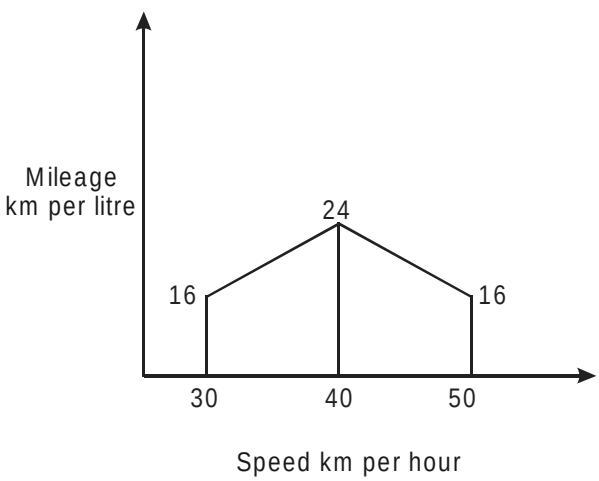
16. After travelling for 30 minutes, a train met with an accident and was stopped there for 45 minutes. Due to the accident, its speed reduced to $\frac{2}{3}$rd of its initial speed and the train reached its destination 90 minutes late. Had the accident occurred 60 km after the point it occurred earlier, the train would have reached 30 minutes earlier than it was reaching after the previous accident. Find the length of the journey.
(1) 90 km (2) 120 km
(3) 60 km (4) 180 km

17. A can cover a certain distance in 30 minutes and B can cover the same distance in 70 minutes. In how much time can C cover the same distance, if his speed is the sum of the speeds of A and B?
(1) 35 minutes (2) 28 minutes
(3) 21 minutes (4) 42 minutes

18. The distance between Ankit's house and office is 60 km. One day, he covers half of the distance at twice of his usual speed and the rest of the distance at half of his usual speed. If he took 75 minutes more than the usual time, find the usual speed (in km/hr).
(1) 12 (2) 15
(3) 20 (4) 10

19. The distance between A and B is 19 km. A cyclist starts from A at a constant speed towards B. A car leaves from A 15 min later in the same direction. In 10 min it catches up with the cyclist and continues towards B; after reaching B, it turns around and in 50 min after leaving, car encounters the cyclist the second time. The speed of the car is
(1) 30 km/hr (2) 40 km/hr
(3) 35 km/hr (4) 80 km/hr

20. Rajiv reaches city B from city A in 4 hours, driving at speed of 35 kmph for the first two hour and at 45 kmph for the next two hours. Aditi follows the same route, but drives at three different speeds: 30, 40 and 50 kmph, covering an equal distance in each speed segment. The two cars are similar with petrol consumption characteristics (km per litre) shown in the figure below. **[CAT 1999]**



Zoheb would like to drive Aditi's car over the same route from A to B and minimize the petrol consumption for the trip. What is the quantity of petrol required by him?
(1) 6.67 l (2) 7 l
(3) 6.33 l (4) 6.0 l

21. Ram, Shyam and Hari went out for a 100 km journey. Ram and Hari started the journey in Ram's car at the rate of 25 kmph, while Shyam walked at 5 kmph. After sometime, Hari got off and started walking at the rate of 5 kmph and Ram went back to pick up Shyam. All three reached the destination simultaneously. The number of hours required for the trip was: **(XAT 2013)**

22. On a 20 km tunnel, connecting two cities A and B, there are three gutters (1, 2 and 3). The distance between gutters 1 and 2 is half the distance between gutters 2 and 3. The distance from city A to its nearest gutter, gutter 1, is equal to the distance of city B from gutter 3. On a particular day, the hospital in city A receives information that an accident has happened at gutter 3. The victim can be saved only if an operation is started within 40 min. An ambulance started from city A at 30 km/hr and crossed gutter 1 after 5 min. If the driver had doubled the speed after that, what is the maximum amount of time would the doctor get to attend the patient at the hospital. Assume 1 min is elapsed for taking the patient into and out of the ambulance? **[CAT 2002]**
(1) 4 min
(2) 2.5 min
(3) 1.5 min
(4) The patient died before reaching the hospital

23. X has got three cars - Ferrari, McLaren and Honda. McLaren runs at twice the speed of Honda; Ferrari runs at twice the speed of McLaren. On driving McLaren X takes half an hour to reach his office. He uses his car only to commute to the office and he goes to the office 5 days a week. In the weekends, he spends time with his family. In the first two days of the week, X drove Ferrari. For the next 3 days, in how many ways can he choose his cars so that his total travelling time in a week is 5 hours?

Directions for questions 24 and 25: Answer the questions on the basis of the information given below.

A triangular garden in Gopal colony is to be enclosed inside three straight fences. Raju started running at a uniform speed on the three sides of the proposed boundary of the garden and discovered that he would take 48 minutes, 102 minutes and 90 minutes to traverse the garden's three sides. However, in the latest colony meet, it was decided that the coverage area of the park should be reduced to accommodate a parking lot. Since the fence on the shortest boundary was already constructed, the length of the boundary covered by Gopal in 90 mins, was reduced by 60% and the longest side of the garden was modified accordingly so that the park still remained triangular in shape.

24. How much time (in minutes) will Raju take to run along the boundary of the garden thus formed?

25. If Raju's speed was 15 metres per minute, then what is the approximate area of the parking lot?
(1) 0.39 km^2 (2) 0.26 km^2
(3) 0.29 km^2 (4) 0.45 km^2

Average Speed

26. A car travels from A to B in 46 min. If the distance between A and B is 52.8 km, what is the (approximate) average speed of the car?
(1) 1.14 km/hr (2) 40.5 km/hr
(3) 68.86 km/hr (4) 84.2 km/hr

27. A car travels first 45 km of a journey at a speed of 15 km/hr. It covers the next 50 km at a speed of 25 km/hr and the rest 25 km at a speed of 15 km/hr. What is the average speed (in km/hr) of the car during the journey?

28. A person covers 180 km, 240 km and 300 km by car, train and bus respectively. Find the average speed of the whole journey if the speed of car, train and bus is 60 km/hr, 80 km/hr and 50 km/hr respectively.
(1) $63\frac{1}{3}$ km/hr (2) 60 km/hr
(3) $62\frac{1}{3}$ km/hr (4) 62 km/hr

29. Anu covers some distance at 4 km/hr and the rest at 6 km/hr. If the average speed for the entire journey is 5 km/hr and total distance covered is 50 km, then how much distance (in km) is covered at 4 km/hr?
(1) 25 (2) 20
(3) 30 (4) None of these

30. Excluding stoppages, the average speed of a bus is 54 km/hr, and including stoppages it is 45 km/hr. For how many minutes does the bus stop per hour?

QA - 07 : TSD - 1
Answers and Explanations

CEX-Q-0208/18

1	3	**2**	2	**3**	1	**4**	3	**5**	3	**6**	2	**7**	2	**8**	3	**9**	1	**10**	3
11	2	**12**	2	**13**	3	**14**	2	**15**	1	**16**	2	**17**	3	**18**	1	**19**	1	**20**	1
21	–	**22**	3	**23**	–	**24**	–	**25**	3	**26**	3	**27**	–	**28**	2	**29**	2	**30**	–

1. 3 Let speed (in m/s) of a scooter, a car and a train be y, 4y and 16y respectively. Let they all cover equal distance of 'd' meters.

Time taken by each of the three is $\frac{d}{y}, \frac{d}{4y}$ and $\frac{d}{16y}$ respectively.

∴ Required ratio of time taken is given as:

Scooter : Car : Train $= \frac{d}{y} : \frac{d}{4y} : \frac{d}{16y}$

$= 1 : \frac{1}{4} : \frac{1}{16} = 16 : 4 : 1.$

2. 2 Let the usual speed of the man be 's' m/min and usual time be 't' minutes.

When speed decreases to $\frac{4}{5}$s, time taken will be $\frac{5}{4}$t.

(Since speed is inversely proportional to time taken.)

$\frac{5}{4}t - t = 10 \Rightarrow t = 40$

Usual time taken = 40 minutes.

3. 1 Let the normal speed be x km/hr and normal time taken be t hours.

Total distance = xt km

$\Rightarrow \frac{xt}{\frac{3}{4}x} = t + \frac{45}{60} \Rightarrow t = 2\frac{1}{4}\text{hr}$

Short cut:

$\left(\frac{4}{3} - 1\right)$ usual time = $\frac{45}{60} \Rightarrow$ Usual time = $2\frac{1}{4}$hr

4. 3 Let the actual time taken by the train to travel 100 km be t hours. Then, speed = $\frac{100}{t}$ km/hr.

Now, $\frac{100}{x} = t + 1 \Rightarrow t = \frac{100 - x}{x}$

∴ Speed = $\frac{\frac{100}{100-x}}{x} = \frac{100x}{100-x}$ km/hr

5. 3 Let x be the distance between house and office and t be the normal time taken.

$\frac{x}{5} = t + \frac{1}{12}$ … (i)

$\frac{x}{6} = t - \frac{1}{12}$ … (ii)

Subtracting (ii) from (i), we get

$x\left(\frac{1}{5} - \frac{1}{6}\right) = \frac{1}{6}$

$\Rightarrow x\left(\frac{1}{30}\right) = \frac{1}{6} \Rightarrow x = 5\text{km}.$

6. 2 Let the distance be x km.

$\frac{x}{15} - \frac{x}{25} = 8 \Rightarrow x = 300\,\text{km}.$

7. 2 Let the distance covered by the man each time be 'd' km and time taken by him to cover 'd' km at a speed of 10 km/hr be 't' hours.

Then, $\frac{d}{t} = 10$ and $\frac{d}{t-2} = 15$

Equating the value of d : 10 × t = 15 × (t – 2)

$\Rightarrow$ t = 6 hours

∴ Required speed = $\frac{d}{t-1} = \frac{10t}{t-1}$

$= \frac{10 \times 6}{5} = 12$ km/hr.

8. 3 $\frac{1}{2}$ of the journey = $\frac{928}{2} = 464$ km

$\frac{3}{5}$th of the time (10 hrs) = 6 hrs

Remaining distance = 464 km

Remaining time = 10 – 6 = 4 hrs

Speed for the remaining journey = $\frac{464}{4} = 116\,\text{km/hr}$

9. 1 Since distance and time taken by the two men are same, their speed will be same. At 8 a.m., when the second man starts, the first man covers $\frac{1}{2}$ of the distance in 2 hr, i.e. he can cover $\frac{1}{4}$ distance in 1 hr. In the next hour, both cover $\frac{1}{4}$ distance and hence meet at 9 a.m.

10. 3 Let the total distance be x. So the man travels a distance $\frac{3x}{5}$ at a speed 3a. Therefore, total time taken to travel this distance

$= \frac{3x}{(15a)} = \frac{x}{(5a)} \left[\text{Time} = \frac{\text{distance}}{\text{speed}}\right]$

He then travels a distance $\frac{2x}{5}$ at a speed 2b. Hence, time taken to travel this distance = $\frac{2x}{(10b)} = \frac{x}{(5b)}$.

So total time taken in going from A to B = $\frac{x}{(5a)} + \frac{x}{(5b)}$.

Now he travels from B to A and comes back. So total distance travelled = 2x at a constant speed 5c.

Hence, time taken to return = $\frac{2x}{(5c)}$.

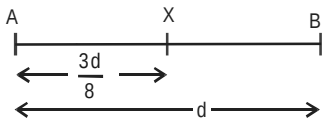
Since the time taken in both the cases remains the same, we can write $\frac{x}{5a} + \frac{x}{5b} = \frac{2x}{5c}$.

Therefore, $\frac{1}{a} + \frac{1}{b} = \frac{2}{c}$.

11. 2 Distance covered in 1 min = 10 × 20 = 200 ft

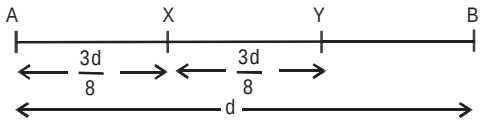
Time taken for 970 ft = $\frac{970}{200}$ = 4.85 min.

12. 2 AB is the tunnel and 'd' km be its length.



Let the current position of the cat be X. If it runs towards A, it would reach A at the same time as the train reaches A.

However, if it runs towards the other end B, it would reach point Y at the same time when the train reaches A. Hence, point Y would be at a distance of $\frac{3d}{8}$ km from X



As the cat and the train would reach B simultaneously, the cat would cover the rest $\frac{2d}{8} = \frac{d}{4}$ km distance in the same time that the train takes to cover the whole tunnel i.e. d km.

Therefore, the speed of the train = 4 × the speed of the cat.

Hence, ratio of the speeds of the train and cat is 4 : 1.

13. 3 The vehicle travels 19.5 km/L at the rate of 50 km/hr.

So it should travel $\frac{19.5}{1.3}$ km/L at the rate of 70 km/hr = 15 km/L.

The distance covered at 70 km/hr with 10 L = 10 × 15 = 150 km.

14. 2 $18 \propto \sqrt{9}$

$42 \propto \sqrt{x}$; Here x = number of compartments

$\frac{18}{42} = \frac{\sqrt{9}}{\sqrt{x}}$

Simplifying, x = 49, but this is with reference to maximum speed. Hence number of compartments would be one less in order to run i.e. 48.

15. 1 Total time taken by B to cover 60 km = $\frac{60}{50}$hr = $\frac{6}{5}$hr

It stops at station C for $\frac{1}{4}$hr.

Now in $\left(\frac{6}{5} + \frac{1}{4}\right)$hr train X travels $70 \times \frac{29}{20} = 101.5$ km

This means they do not cross each other by the time train Y finishes its stop at station C.

Let they meet after t hr.

Then, $70t + 50(t - \frac{1}{4}) = 180 \Rightarrow t = \frac{192.5}{120}$ hr

Distance from A will be $(70 \times \frac{192.5}{120})$ km

= 112 km approximately

16. 2 Let length of the journey = x km and initial speed of the train = v km/hr.

Companing the usual time taken and time taken on the day of accident, we get,

$$\left[\frac{1}{2} + \frac{3}{4} + \frac{x - \frac{v}{2}}{\frac{2v}{3}}\right] - \frac{x}{v} = 1\frac{1}{2}$$

Also $\dfrac{\frac{v}{2}+60}{v}+\dfrac{3}{4}+\dfrac{x+\frac{v}{2}-60}{\frac{2v}{3}}-\dfrac{x}{v}=1$

Solving for x, we get x = 120 km and v = 60 km/hr.

Alterative method:
Overall, the train was late by 1 hr 30 min.
Out of this the train was standing for 45 min. So due to the reduction of the speed to $\frac{2}{3}$rd of the original speed, the train delayed by 45 min only.

$\therefore \left(\frac{3}{2}t-t\right)=\frac{t}{2}=45$ min

or t = 90 min. where 't' is the normal time taken by the train to cover the stretch from the point of accident to the destination.
Had the accident occurred 60 km down the line, the train would have been delayed by 1 hr only.
Due to the reduction in speed, the delay would have been 15 min only (1 hr – 45 min stoppage)
$\therefore$ Normal time to cover the remaining distance
$\Rightarrow$ t = 2 × 15 = 30 min.
It means the train usually covers 60 km in 60 min (90 – 30 min).
Speed of the train = 60 km/hr.
Total length of the stretch of the journey
= 30 km + 90 km = 120 km.

17. 3 Let the distance to be covered be 'd' km.

Speed of A = $\frac{d}{30}$ km/min

Speed of B = $\frac{d}{70}$ km/min

Speed of C = $\frac{d}{30}+\frac{d}{70}=\frac{d}{21}$ km/min

$\therefore$ Time taken by C = 21 minutes.

Short cut:

Time taken by C = $\frac{30\times70}{30+70}=21$ minutes.

18. 1 Let the usual speed of Ankit be 'x' km/hr.

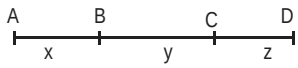
$\frac{30}{2x}+\frac{30}{\frac{x}{2}}=\frac{60}{x}+\frac{75}{60}$

$\Rightarrow \frac{15}{x}+\frac{60}{x}=\frac{60}{x}+\frac{75}{60} \Rightarrow x = 12$ km/hr.

19. 1 Let the speed of the cyclist be x km/min, and that of the car y km/min. The car had travelled for 10 min and the cyclist for 10 + 15 = 25 min when he was caught up by the car.
By this moment, they had covered the same distance. Consequently, 25x = 10y. By the time the car on its return trip encountered the cyclist. The car had covered 50y km and the cyclist 65x km. The sum of these distances is equal to twice the distance between A and B.
Therefore, 65x + 50y = 38. Solving the system of equations, we find x = 0.2 km/min and y = 0.5 km/min.

Speed of the car = 0.5 × 60 km/hr = 30 km/hr.

20. 1 For minimum petrol consumption, Zoheb should drive at 40 kmph, petrol consumption = $\frac{160}{24}$ = 6.67 l.

21. 

Let the starting point for all the three, the point at Hari gets off from the car, the point at which Ram picks up Shyam and the final point of the journey be A, C, B and D respectively.
Let AB = x, BC = y and CD = z.

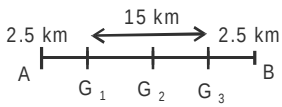
$\therefore \frac{x}{5}=\frac{x+2y}{25} \Rightarrow y = 2x$ ...(i)

and $\frac{z}{5}=\frac{z+2y}{25} \Rightarrow y = 2z$ ...(ii)

From (i) and (ii), we get,
x : y : z = 1 : 2 : 1
Therefore, x = z = 25 km and y = 50 km

Hence, the required time $=\frac{x+y+2y+z}{25}$

$=\frac{25+50+100+25}{25}=8$ hours.

22. 3 

$AG_1=\frac{30\times5}{60}=2.5$ km

$G_1G_3 = 15$ km
Time for AG_1 = 5 min

Time for $G_1G_3+G_3A+G_3B=32.5$ min

Time for AB = 5 + 32.5 = 37.5 min.
1 min is taken for transferring the patient into and out of the ambulance.
Hence, (40 – 37.5 – 1) = 1.5 min is remaining.

23. We have to consider both, travelling to and from the office.
Suppose the speed of Honda is V.
Speed of McLaren = 2v
Speed of Ferrari = 4V

McLaren takes $\frac{1}{2}$ hr. Travel time = 1 hr

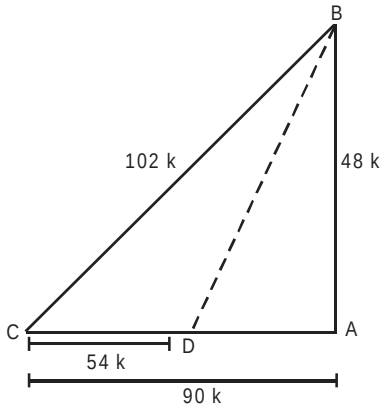
Honda takes 1 hr. Travel time = 2 hr.

Ferrari takes $\frac{1}{4}$ hr . Travel time = $\frac{1}{2}$ hr

Note that after the first two days, 1 hour of the 5 hour is already spent. In the next 3 days, he has to spend 4 hours. If he chooses Ferrari, in any of the subsequent days, he will hot be able to spent the 4 hours. So, in the next three days, he has to choose either Mclaren or Honda.
He can choose to take McLaren 2 days and Honda one day. This can be done in 3 ways.

$\left\{\begin{matrix}\text{MMH}\\\text{MHM}\\\text{HMM}\end{matrix}\right\}$

For questions 24 and 25:
Since speed of Raju remains constant, distance covered by him must be proportional to the time taken.
Here, $(48k)^2+(90k)^2=(102k)^2 \Rightarrow$ BAC is right angled triangular garden (k, being Raju's speed)



60% of 90k = 54k
$\Rightarrow$ AD = (90 – 54)k = 36k
$\Rightarrow BD = k\sqrt{48^2+36^2} = 60k$

24. AD + DB + BA = (36 + 60 + 48)k = 144 k
$\Rightarrow$ Raju will take 144 minutes.

25. 3 Raju's speed = 15 m/min = k
$\Rightarrow$ CD = 54 × 15 meters and AB = 48 × 15 meters
Area of parking lot
$= \text{Area of } \Delta BDC = \frac{1}{2}\times CD\times AB$
$= \frac{1}{2}\times 54\times 15\times 48\times 15 = 2,91,600\ m^2 \approx 0.29\ km^2$

26. 3 Distance covered = 52.8 km

Time taken = 46 min = $\frac{46}{60}$hr

Average speed = $\frac{52.8}{46}\times 60 = 68.86$ km/hr

27. Average speed = $\frac{\text{Total distance travelled}}{\text{Total time taken}}$

$= \frac{45+50+25}{\frac{45}{15}+\frac{50}{25}+\frac{25}{15}} = \frac{120\times 3}{20} = \frac{360}{20} = 18\ \text{km/hr.}$

28. 2 Time taken to cover 180 km by car = $\frac{180}{60} = 3\,\text{hrs}$

Time taken to cover 240 km by train = $\frac{240}{80} = 3\,\text{hrs}$

Time taken to cover 300 km by bus = $\frac{300}{50} = 6\,\text{hrs}$

Total time taken to complete the whole journey
= 3 + 3 + 6 = 12 hrs

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

$= \frac{180+240+300}{12} = \frac{720}{12} = 60\,\text{km/hr.}$

29. 2 Let distance (in km) covered at a speed 4 km/hr be x.

$\therefore \frac{x}{4}+\frac{50-x}{6} = \frac{50}{5}$

$\Rightarrow \frac{3x+100-2x}{12} = 10$

$\Rightarrow$ x + 100 = 120
$\Rightarrow$ x = 20
Hence, the distance covered at a speed of 4 km/hr is 20 km.

30. Due to stoppages, the bus covers 9 km less in 1 hr.

Time taken to cover 9 km = $\frac{9}{54}\times 60 = 10$ min .

Hence, on average the bus stops for 10 min every hour.