TIME, SPEED & DISTANCE

(Ref: FM-QAH2022006)

Basics

1. Convert the following speeds into meters per second
   (a) 54 km/hr
   a) 10 b) 12 c) 15 d) 20
   (b) 12.6 km/hr
   a) 3.5 b) 4 c) 0.35 d) 6

2. If Aman rides a cycle at 3.5 m/s, what distance will he cover in 5 hours? (in km)

3. If Ram runs at 6meterss per second. What distance (in km) will he cover in 3 hours and 45 minutes?
   a) 81 b) 54 c) 108 d) 27

4. Sound is said to travel in the air at about 1100 feet per second. A man hears the axe striking the tree,11/5 seconds after he sees it strike the tree. How far is the man from the woodchopper?
   a) 2197 ft b) 2420 ft
   c) 2500 ft d) 2629 ft

5. A can complete a journey in 10 hours. He travels first half of the journey at the rate of 21 km/hr and second half at the rate of 24 km/hr. Find the total journey in km.
   a) 220 km b) 224 km
   c) 230 km d) 234 km

6. A person travels equal distances with speeds of 3km/hr, 4 km/hr and 5km/hr and takes a total time of 47 minutes. The total distance (in km) is:
   a) 2 b) 3 c) 4 d) 5

7. A man while returning from his factory, travels 2/3 of the distance by bus and ¾ of the rest by car, and the remaining by foot. If he travels 2 km on foot, find the distance covered by him.
   a) 24 km b) 22 km c) 28 km d) 26 km

8. A plane left 30 min later than its scheduled time to reach its destination 1500 km away. In order to reach in time it increases its speed by 250 km/h. What is its original speed?
   a) 1000 km/h b) 750 km/h
   c) 600 km/h d) 800 km/h

9. A man is walking at a speed of 10 km per hour. After every kilometer, he takes a rest for 5 minutes. How much time will he take to cover a distance of 5 kilometers?
   a) 48 min. b) 50 min.
   c) 45 min. d) 55 min.

10. A salesman travels a distance of 50 km in 2 hours and 30 minutes. How much faster, in kilometers per hour, on average, must he travel to make such a trip in 5/6 hour less time?
    a) 10 b) 20 c) 30 d) None

11. The speed of a car increases by 2 km after every one hour. If the distance traveled the first one hour was 35 kms, what was the total distance traveled in 12 hours?
    a) 456 kms b) 482 kms
    c) 552 kms d) None

12. A person has to cover a distance of 6 km in 45 minutes, If he covers one-half of the distance in two-thirds of the total time; to cover the remaining distance in the remaining time, his speed (in km/hr) must be:
    a) 6 b) 8 c) 12 d) 15

13. A motorcyclist covered two-thirds a total journey at his usual speed. He covered the remaining distance at three fourth of his usual speed. As a result, he arrived 30 minutes later than the time he would have taken at usual speed. If the total journey was 180 km, what is his usual speed?
    a) 40 kmph b) 36 kmph
    c) 30 kmph d) 32 kmph

14. A student rides on a bicycle at 8 km/h and reaches his school 2.5 minutes late. The next day he increases his speed to 10 km/h and reaches the school 5 minutes early. How far is the school from his house?
    a) 1.25 km b) 8 km
    c) 5 km d) 10 km

Variation

15. The ratio of the speeds of P, Q and R is 3 : 4 : 6. Find the ratio of the time that they take to travel a certain distance.
    a) 2 : 3 : 4 b) 6 : 4 : 3
    c) 4 : 3 : 2 d) 3 : 4 : 6

16. Sandeep saves 6 minutes by increasing his speed by 25%. What is the time taken to cover the distance at his usual speed? (in minutes)

17. Traveling at 5/6th of his usual speed Ashish is 10 minutes late. What is the usual time he takes to cover the same distance?
    a) 50 minutes b) 70 minutes
    c) 1 hour d) 75 minutes

18. If Ram travels at 30 kmph, he reaches his destination at 4 p.m., and if he increases his speed to 40 kmph he reaches one hour earlier. Find the distance he has to travel to reach his destination.

19. Rahul travels from his house to his office. If he travels at 10 kmph, he would reach his office 2 minutes late. If he travels at 15 kmph he would reach his office 3 minutes early. Find the distance between his house and his office. Also find the speed at which he should travel to reach his office exactly on time.

20. If Amit increases his speed by 25%, he reaches office 12 minutes early. Find the time taken by the

person to reach his office if he decreases his speed by 25%.

21. The distance between Lucknow and Pune is 1440 km. Two persons A and B started simultaneously from Lucknow towards Pune. B took 6 hours less than A to reach Pune. Instead, if A travels at twice his speed, he reaches Pune 6 hours earlier than B. Find the speed of B (in kmph).

22. A and B are two stations 630 km apart. P starts from A and moves towards B at 90 km/hr. Q starts from B at the same time and moves towards A at 120 km/hr. Find the extra distance traveled by Q when they meet.

23. A certain distance is covered by a train with a certain speed. If half the distance is covered in double time, then the ratio of this speed to that of the original one is
a) 1 : 4 b) 4 : 1 c) 1 : 2 d) 2 : 1

24. Two persons A and B started from two different places towards each other. If the ratio of their speed be 3 : 5, then what is the ratio of distance covered by A and B respectively till the point of meeting?
a) 1 : 2 b) 3 : 4 c) 3 : 5 d) 5 : 3

25. A and B travel the same distance at 9 km/h and 10 km/h respectively. If A takes 20 minutes longer than B, the distance traveled by each is:
a) 16 b) 20 c) 30 d) None

26. A passenger train takes two hours less for a journey of 300 km if its speed is increased by 5 km/h from its normal speed. The normal speed of the train is
a) 35 km/h b) 50 km/h
c) 25 km/h d) 30 km/h

27. It takes eight hours for a 600 km journey, if 120 km is done by train and the rest by car. It takes 20 minutes more, if 200 km is done by train and the rest by car. The ratio of the speed of the train to that of the speed of the car is
a) 4 : 3 b) 3 : 4 c) 3 : 2 d) 2 : 3

28. A man covers a certain distance on a toy train. If the train moved 4 km/h faster, it would take 30 minutes less. If it moved 2 km/h slower, it would have taken 20 minutes more. Find the distance.
a) 60 km b) 58 km c) 55 km d) 50 km

29. Vinay fires two bullets from the same place at an interval of 12 minutes but Raju sitting in a train approaching the place hears the second report 11 minutes 30 seconds after the first. What is the approximate speed of the rain (if sound travels at the speed of 330 meters per second)?
a) 660/23 m/s b) 220/7 m/s
c) 330/23 m/s d) 110/23 m/s

30. A man takes 5 hour 45 min. in walking to a certian place and riding back. He would have gained 2 hours by riding both ways. The time he would take to walk both ways, is
a) 3 hrs 45 min b) 7 hrs 30 min
c) 7 hrs 45 min d) 11 hrs 45 min

31. 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 traveled by train?
a) 840 km b) 960 km
c) 870 km d) 1100 km

32. Two ants start simultaneously from two ant holes towards each other. The first ant covers 8% of the distance between the two ant holes in 3 hours, the second ant covered 7/120 of the distance in 2 hours 30 minutes. Find the speed (feet/h) of the second ant if the first ant travelled 800 feet to the meeting point.
a) 15 feet/h b) 25 feet/h
c) 45 feet/h d) 35 feet/h

Average Speed

33. Amit left A and reached B in 4 hours. His average speed for the journey was 90 kmph. Find the distance between A and B (in km).

34. Shiva travelled for 2.5 hours at 40 kmph and for another 2.5 hours at 60 kmph. Find his average speed for the journey (in kmph).
a) 50 b) 48 c) 54 d) 60

35. Kapil travelled for 3 hours at 40 kmph and then for 5 hours at 60 kmph. Find his average speed (in kmph) for the journey.
a) 50 b) 48 c) 52.5 d) 42

36. Ram travels a certain distance at a speed of 40 km/hr and returns to the starting point at a speed of 60 km/hr. What is his average speed for the entire trip?

37. a) Rajat travels the first one-fourth of his journey time at 100 kmph, and the remaining at 80 kmph. If he covers a total distance of 400 km, find his average speed over the entire journey.
b) In the above problem, if A travels the first one fourth distance at 80 kmph and the remaining at 100 kmph, what is his average speed for the entire journey?

38. Anurag covers a distance in the following manner. He covers the first half of the distance at 50 kmph, 40% of the remaining at 40 kmph and the remaining distance at 60 kmph. Find his average speed over the entire journey.

39. A man walks half of the journey at 4 km/h by cycle does one third of journey at 12 km/h and rides the remainder journey in a horse cart at 9 km/h, thus completing the whole journey in 6 hours and 12 minutes. The length of the journey is
a) 36 km b) 13[32/67] km
c) 40 km d) 28 km

40. A long distance runner runs 9 laps of a 400 metres track everyday. His timings (in minutes) for four

consecutive days are 88, 96, 89 and 87respectively. On an average, how many metres/minute does the runner cover?
a) 40 m/min b) 45 m/min
c) 38 m/min d) 49 m/min

41. An airplane flies along the four sides of a square at speeds of 200, 400, 600, and 800 km/h. Find the average speed of the plane around the field.
a) 384 km/h b) 370 km/h
c) 368 km/h d) None

42. Ram travel part of a journey at 45 km/hr and rest of the journey at 60 km/hr. if he covers a total of 300 km in a total of 6 hrs. find the distance covered at the two different speed.

43. An airplane first flew with a speed of 440 km/h and covered a certain distance. It still had to cover 770 km less than what it had already covered, but it flew with a speed of 660 km/h. The average speed for the entire flight was 500 km/h. Find the total distance covered.
a) 3520 km b) 2750 km
c) 4400 km d) 1760 km

44. Pankaj went to the post-office at the speed of 60 km/hr while returning for his home he covered the half of the distance at the speed of 10 km/hr, but suddenly he realized that he was getting late so he increased the speed and reached the home by covering rest half of the distance at the speed of 30 km/hr. The average speed of the Pankaj in the whole length of journey is:
a) 5.67 km/hr b) 24 km/hr
c) 22.88 km/hr d) 5.45 km/hr

45. Akash travel for first 100 kms at a speed of 50 km/hr, the next 1 hour at a speed of 40 kmph and the rest of the journey at a speed of 60 kmph. If the average speed of entire journey is 52 km/hr, find the duration and distance of entire journey.

Relative Speed

46. P and Q are 270 km apart. At 9:00 a rn, buses A and B left P and Q for Q and P respectively. If the speeds of A and B are 50 kmph and 40 kmph respectively, find their meeting time.
a) 10:00 a.m b) 12:00 p.m
c) 3: 00 p.m d) 11:00 a.m

47. Car A left P for Q at 9:00 a.m. Car B left Q for P at 10:00 a.m. PQ = 180 km. Speeds of A and B are 30 kmph and 20 kmph respectively. Find their meeting time.
a) 1:30 p.m. b) 1:00 p.m.
c) 12:30 p.m d) 3:00 p.m

48. P, Q and R stay along a straight road, in the same order from left to right, with distance between P and R being 2800 meters. All three start simultaneously P rightwards and Q & R leftwards at speed of 10 m/s 5 m/s and 25 m/s. If all three meet at the same time, find the location of Q.

49. Train P started from town A towards town B at 7:00 a.m. and reached B at 3:00 p.m. Train Q started from B towards A at 8:00 a.m. and reached A at 4:00 p.m. At what time did both the trains cross each other?

50. Mukesh is a thief. He steals a Mobile from Ram's house and escapes on his bike at 7:00 a.m. at a speed of 40 kmph. At 8:00 a.m., Ram realizes that there had been a burglary and immediately starts chasing Mukesh on his Car at a speed of 60 kmph.
a) At what time will Ram catch up with Mukesh?
b) What is the distance covered by Mukesh before he was caught?

51. A and B start running simultaneously from P and Q, towards Q and P respectively They meet each other after a certain time 't'. Thereafter A and B take 16 seconds and 25 seconds to reach their respective destinations. If A's speed was 12 m/s, find the distance between P and Q.

52. Two men starting from the same place walk at the rate of 5 km/h and 5.5 km/h respectively. What time will they take to be 8.5 km apart, if they walk in the same direction?
a) 16 h b) 8 h 30 min
c) 4h / 5min d) 17 h

53. A car driver, driving in a fog, passes a pedestrian who was walking at the rate of 2 km/hr in the same direction. The pedestrian could see the car for 6 minutes and it was visible to him up to a distance of 0.6 km. What was the speed of the car?
a) 15 km/hr b) 30 km/hr
c) 20 km/hr d) 8 km/hr

54. Bombay Express left Delhi for Bombay at 14.30 hrs, travelling at a speed of 60 kmph and Rajdhani Express left Delhi for Bombay on the same day at 16.30 hrs, travelling at a speed of 80 kmph. How far away from Delhi will the two trains meet?
a) 120 km b) 360 km
c) 480 km d) 500 km

55. Points A and B are 70 km apart on a highway. One car starts form A and the another one from B at the same time. If they travel in the same direction, they meet in 7 hours. But if they travel towards each other, they meet in one hour. The speeds of the two cars are, respectively.
a) 45 and 25 km/h b) 70 and 10 km/h
c) 40 and 30 km/h d) 60 and 40 km/h

56. A dog sees a cat. It estimates that the cat is 25 leaps away. The cat sees the dog and starts running with the dog in hot pursuit. If in every minute, the dog makes 5 leaps and the cat makes 6 leaps and one leap of the dog is equal to 2 leaps of the cat. Find the time in which the cat is caught by the dog (assume an open field with no trees)
a) 12 minutes b) 15 minutes
c) 12.5 minutes d) None

57. A train of 300 m is traveling with the speed of 45 km/h when it passes point A completely. At the same time, a motorbike starts from point A with a speed of 70 km/h. When it exactly reaches the middle point of

the train, the train increases its speed to 60 km/h and motorbike reduces its speed to 65 km/h. How much distance will the motorbike travel while passing the train completely?
a) 2.52 km b) 2.37 km
c) 2 km d) None

58. A,B,C started out on a journey to a point which is 120 km away from their starting point of journey. A and B went by car at the speed of 50 km/h, while C walked at 10 km/h. after a certain distance B got off and travelled the rest distance by walking at 10 km/h, while A went back for C and all of three reached the destination at the same time. The no of hours required for the journey was?

To & fro

59. A and B start walking simultaneously from point P towards point Q. The ratio of the speeds of A to B is 3:2. After reaching Q, A starts walking back towards P and meets B. If PQ = 400 m, find the distance of the meeting point from P.

60. A and B are at two opposite ends of a swimming pool. P and Q respectively. They start simultaneously towards the other end and meet for the first time at 96 metres from A. Both continue on their paths, reach the other end, turn back and again meet, this time at 48 meters from B. find the length of the pool.

61. Two persons start from the opposite ends of a 90 km straight track and run to and fro between the two ends. The speed of first-person is 30 m/s and the speed of other is 125/6 m/s. They continue their motion for 10 hours. How many times they pass each other?
a) 10 b) 9 c) 12 d) None

62. There are two points X and Y 100 m apart. A and B started from X and Y towards each other with a speed of 70m/s and 30 m/s. find the time after which A and B meet for the 1st 2nd and 3rd time.

63. A group of soldiers are marching with a speed of 5 m/s. the distance b/w 1st and last row of soldiers is 100 m. A dog starts running from the last row to 1st row and then back again to the last row. The total distance covered by the dog is 400m. Find the speed of the dog.

64. There is a 40m long army platoon marching ahead. A dog starts from the last parson, runs towards the first person in the platoon, touches him and without stopping comes back to the last person. In the mean time the whole platoon has moved ahead by 40m. What is ratio of speeds of dog and platoon. (assuming that dog & platoon ran the whole distance with uniform speed)
a) $(\sqrt{2}+1):1$ b) $(\sqrt{2}+3):1$
c) 2 : 1 d) None of these

65. P starts running at a speed of 10 m/s from a point. Q, Who is 5000 m behind him, starts chasing him at a speed of 20 m/s. There is a dog running at 30 m/s which starts from Q and keeps on running to and fro between him and P till the latter gets caught. Find
a) Total distance traveled by the dog.
b) Total distance traveled by the dog in the forward direction (assume the direction in which the dog started running is the forward direction).

Trains

66. What is the time taken by a train 1000 m long to cross an electric pole, If the speed of the train is 50 km/hr?
a) 60 sec b) 80 sec c) 75 sec d) 72 sec

67. What is the time taken by a train 650 m long travelling at 36 km/hr to cross a 750 m long plateform?
a) 140 sec b) 130 sec
c) 70 sec d) 120 sec

68. How long will a train 150 m long travelling at 90 kmph take to cross a train 200 m long travelling at 36 kmph in the opposite direction?
a) 20 sec b) 22 sec
c) 30 sec d) 10 sec

69. Trains A and B have lengths of 400 m, and 600 m respectively. They are running on parallel tracks towards each other. Find the total distance covered by the two trains from the time they start to cross each other to the time they completely cross each other.
a) 2000 m b) 1000 m
c) 200 m d) Cannot be determined

Direction for Question: These questions are based on the following data.
Train T of length 100 metres moving at 54 kmph and train U of length 150 metres moving at 90 kmph running on parallel tracks enter a 200-metre long tunnel at the same instant from opposite directions.

70. Which train exits the tunnel first and at the moment it exits what length of the other train is still in the tunnel?
a) U, 90 m b) T, 10 m
c) U, 10 m d) T, 90 m

71. How far is the point where the rear ends of the two trains cross each other, from the point of entry of the slower train?
a) 68.25 m b) 68.75 m
c) 68.50 m d) 68 m

72. Two trains each of 120 m in length, run in opposite directions with a velocity of 40 m/s and 20 m/s respectively. How long will it take for the tail ends of the two trains to meet each other during the course of their journey?
a) 20 s b) 3 s c) 4 s d) 5 s

73. Two trains starting at the same time from two stations, 200 km apart and going in opposite directions, cross each other at a distance of 110 km from one of them. What is the ratio of their speeds?
a) 11 : 20 b) 9 : 20
c) 11 : 9 d) 19 : 20

74. Two trains are 2 km apart and their lengths are 200 m and 300 m. They are approaching towards each other with a speed of 20 m/s and 30 m/s, respectively. After how much time will they cross each other?
a) 50 s b) 100 s c) 25/3 s d) 150 s

75. A 200 m-long train passes a 350 m long platform in 5 s. If a man is walking at a speed of 4 m/s along the track and the train is 100 m away from him, how much time will it take to reach the man?
a) Less than 1 s b) 1.04 s
c) More than 2s d) Data insufficient

76. A railway passenger counts the telegraph poles on the rail road as he passes them. The telegraph poles are at a distance of 50 meters. What will be his count in 4 hours if the speed of the train is 45 km per hour?
a) 2500 b) 600 c) 3600 d) 5000

77. A train starts from Delhi at 6 : 00 AM and reaches Ambala Cantt at 10 AM. The other train starts from Ambala Cantt at 8 AM and reaches Delhi at 11:30 PM. If the distance between Delhi and Ambala Cantt. is 200 km, then at what time did the two trains meet each other?
a) 8 : 56 AM b) 8 : 46 AM
c) 7 : 56 AM d) 8 : 30 AM

78. A man sitting in a train travelling at the rate of 50 km/hr observes that it takes 9 sec for a goods train travelling in the opposite direction to pass him. If the goods train is 187.5 m long, find its speed.
a) 40 km/hr b) 25 km/hr
c) 35 km/hr d) 36 km/hr

79. Train A running at 60 km/h leaves Mumbai for Delhi at 6 p.m. Train B running at 90 km/h also leaves for Delhi at 9 p.m. Train C leaves Delhi for Mumbai at 9 p.m. If all the three trains meet at the same time between Mumbai and Delhi, then what is the speed of train C, if distance between Delhi and Mumbai is 1260 km?
a) 60 km/h b) 90 km/h
c) 120 km/h d) 135 km/h

80. 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

Boat and Stream, Escalators

81. Shivam can row a boat in still water at a speed of 5 kmph. The speed of the stream is 3 kmph. Find the time taken by him to row 120 km downstream (in hours).

82. P and Q are 2 points on a river. Rudra took 6 hours to row from P to Q ad 8 hours to row from Q to P. Find the ratio of the speeds of his boat in still water and the river.
a) 3:2 b) 7:1 c) 2:1 d) 4:3

83. Speed of a speed-boat when moving in the direction parallel to the direction of the current is 16 km/hr. Speed of the current is 3 km/hr. So the speed of the boat against the current will be (in km/hr)
a) 22 b) 9.5 c) 10 d) None

84. A boat travels upstream from B to A and downsteam from A to B in 3 hours. If the speed of the boat in still water is 9 km/hr and the speed of the current is 3 km/hr, the distance between A and B is
a) 4 km b) 8 km c) 6 km d) 12 km

85. A motor boat can travel at 10 km/h in still water. It traveled 91 km downstream in a river and then returned, taking altogether 20 hours. Find the rate of flow of the river.
a) 6 km/hr b) 5 km/hr
c) 8 km/hr d) 3 km/hr

86. Speed of a boat in standing water is 9 km/h and the speed of the stream is 1.5 km/h. A man rows to a place at a distance of 105 km and comes back to the starting point. The total time taken by him is
a) 20 h b) 18 h c) 16 h d) 24 h

87. 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

88. Two points A and B are located 48 km apart on the riverfront. A motorboat must go from A to B and return to A as soon as possible. The river flows at 6 km/h. What must be the least speed of the motorboat in still water for the trip from A to B and back again to be completed in not more than six hours (assume that the motorboat does not stop at B)?
a) 18 km/h b) 16 km/h
c) 25 km/h d) 46 km/h

89. Rahul can row a certain distance downstream in 6 hours and return the same distance in 9 hours. If the speed of Rahul in still water is 12 km/hr, find the speed of the stream.
a) 2 km/hr b) 2.4 km/hr
c) 3 km/hr d) Data inadequate

90. A man can row 4.5 km/hr in still water and he finds that it takes him twice as long to row up as to row down the river. Find the rate of the stream.
a) 1.5 km/hr b) 2 km/hr
c) 2.5 km/hr d) 1.75 km/hr

91. A boat, while going downstream in a river covered a distance of 50 mile at an average speed of 60 miles per hour. While returning, because of the water resistance, it took one hour fifteen minutes to cover the same distance. What was the average speed of the boat during the whole journey?

a) 40 mph b) 48 mph
c) 50 mph d) 55 mph

92. A boatman rows to a place 45 km distant and back in 20 hours. He finds that he can row 12 km with the stream in same time as 4 km against the stream. Find the speed of the stream.
a) 3 km/hr b) 2.5 km/hr
c) 4 km/hr d) Cannot be determined

93. Atul takes 40 seconds to climb up a 'moving up' escalator and 60 seconds to move down the same 'moving up' escalator. How long will Atul take to move up the escalator when it is switched off?

94. An escalator was moving up from floor A to floor B. It had 240 steps. Bimal took 24 seconds .to walk up on it. If his speed doubled and that of the escalator tripled, he would have taken only ten seconds to walk up on it. Find the time he would take to go from floor B to floor A using the escalator (in seconds).

95. A building had two floors. There were 180 steps from the first floor to the second floor. An escalator was moving up from the first floor to the second floor. Arya took ten seconds to walk from the first floor to the second floor on it. He took 60 seconds to return to the first floor on it. Find the time he would have taken to return if the escalator had been switched off (in seconds).

Races

96. In a kilometer race, P beats Q by 250 m. Find the ratio of the speeds of P and Q.
a) 4:3 b) 2:3 c) 3:4 d) 4:1

97. In a 200 m race, A gives B a start of 10 m and beats him by 10 m. Find the ratio of their speeds.
a) 10:9 b) 20:19 c) 9:10 d) 19:20

98. A beats B by 200 m in a kilometer race. Find B's speed (in m/sec) if A's speed is 10 m/sec (in m/sec)
a) 10 b) 12.5 c) 12 d) 8

99. In a 100 m race, A beats B by 10 m or 2 seconds. Find B's speed (in m/sec)
a) 5 b) 5 5/9 c) 4 ½ d) 6

100. In a 100 m race if P allows Q a head start of 10 m the race ends in a dead heat. They run another race of 400 m with P allowing Q a head start of 40 m. who wins and by what distance?

101. In a 100 m race, P gives Q a start of a m ($a \geq 20$) and is beaten by him by b m ($b \leq 20$). If the speeds of both are distinct, which of the following cannot be the ratio of the speeds of P and Q?
a) 6:5 b) 4:3 c) 7:5 d) 9:10

102. A and B can run 200 m in 22 seconds and 25 seconds, respectively. How far is B from the finishing line when A reaches in?
a) 8 m b) 12 m c) 16 m d) 24 m

103. Ramesh and Somesh are competing in a 100 m race. Initially, Ramesh runs at twice the speed of Somesh for the first fifty m. After the 50 m mark, Ramesh runs at 1/4th his initial speed while Somesh continues to run at his original speed. If Somesh catches up with Ramesh at a distance of 'N' m from the finish line, then N is equal to
a) 35 b) 10 c) 45 d) None

104. A, B, and C are three participants in a kilometer race. If A can give B a start of 40 metres and B can give C a start of 25 metres, how many metres of a start can A give to C?
a) 60 m b) 64 m c) 62 m d) 66 m

Circular Track

105. Amit and Sumit started simultaneously from a point on a circular track of length 600 m with speeds of 15 m/sec and 5 m/sec respectively and walked around it. Find the time taken by them to meet for the first time (in seconds) if.
i) They walked in the same direction
a) 60 b) 50 c) 70 d) 40
ii) They walked in opposite directions
a) 70 b) 30 c) 50 d) 60

106. In the previous question, find the time taken (in seconds) by them to meet at the starting point for the first time if Sumit's speed tripled.

107. P and Q start running simultaneously, from a same point, on a circular track, both in the same direction. If they respectively take 16 and 24 min. to complete one full round, find
i) After how much time will they meet for the first time.
ii) After how much time will they meet for the first time at the starting point.

108. Ram, Shyam and Tarun started cycling from a point on a circular track 600 m long with speeds of 10 m/sec, 15 m/sec and 20 m/sec respectively. Find the time taken by them to meet at the starting point for the first time (in sec)
a) 120 b) 60 c) 240 d) 600

109. P, Q and R run on a circular track of 750 m, with speeds of 10 m/sec, 30 m/s and 50 m/sec respectively. All three start from same point at same time, P runs clockwise and other two anticlockwise, find
i) The time after which all three will be again together for the first time.
ii) Find the number of distinct points on the track, where any two of them can meet.

110. Ram and Shyam are running along a circular track of length 60 m. If their speeds are 2 m/sec and 4 m/sec respectively. How many more rounds than Ram would Shyam have completed in an hour?
a) 240 b) 60 c) 120 d) 30

111. P and Q start from the same point at the same time but move in opposite directions along a circular track of radius 28 km. The initial speed of P is thrice that of Q. Every time they meet, they reverse their directions and exchange their speeds. Find

a) The shortest distance between their starting point and the third meeting point.
b) The distance covered by P from its starting point till its third meeting point.(Take π = 22/7)

112. A walks around a circular field at the rate of one round per hour while B runs around it at the rate of six rounds per hour. They start in the same direction from the same point at 7.30 a.m. They shall first cross each other at:
a) 7.42 a.m. b) 7.48 a.m.
c) 8.10 a.m. d) 8.30 a.m.

113. A and B start running simultaneously from the same point on a 1200 m circular track. A clockwise @50 m/sec and B anticlockwise @30 m/sec. Find
i) Time for 5th meeting
ii) Number of meeting in first 5 min
iii) Number of meeting in time Q complete 12 rounds
iv) Where does 12th meeting takes place
v) Number of meetings in time B complete 5 rounds

114. In a 800 m race around a stadium having the circumference of 200 m, the top runner meets the last runner on the 5th minute of the race. If the top runner runs at twice the speed of the last runner, what is the time taken by the top runner to finish the race?
a) 20 min b) 15 min c) 10 min d) 40 min

115. Two cyclists start on a circular track from a given point but in opposite directions with speeds of 7 m/sec and 8 m/sec respectively. If the circumference of the circle is 300 metres, after what time will they meet at the starting point?
a) 100 sec b) 20 sec
c) 300 sec d) 200 sec

116. Wheels of diameters 7 cm and 14 cm start rolling simultaneously from X and Y which are 1980 cm apart towards each other in opposite directions. Both of them make the same number of revolutions per second. If both of them meet after 10 seconds, the speed of the smaller wheel is
a) 22 cm/s b) 44 cm/s
c) 66 cm/s d) 132 cm/s

117. A, B, and C run simultaneously, starting from a point, around a circular track of length 1200m, with respective speeds of 2m/s, 4m/s, and 6m/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? (in sec)

118. Two men, B and C run around a circular track of length 500m in opposite directions with initial speeds of 4m/s and 1m/s respectively starting from the same point simultaneously. Whenever they meet, Ben's speed halves and Carl's speed doubles, after how much time will they meet for the 3rd time?

119. Two athletes P and Q are running around a circular track of length 1200m at speeds of 6m/s and 3m/s respectively. Both of them start simultaneously from the same point in the same direction but P reverses his direction every time he completes one round. After how much time from the start will they meet for the first time?

120. Two persons, Ali and Baba, start running simultaneously from a point O on a circular track in the same direction. If the ratio of their speeds is 16:11 respectively, how many times are they diametrically opposite to each other before they meet at O for the next time?
a) 3 b) 4 c) 5 d) 6

121. Ali and Baba start simultaneously at the same point on a circular track and run along the track in the same direction. The point on the track at which they meet for the 29th time is same as that at which they meet for the 41st time. If the ratio of the speed of the faster boy to that of the slower one is n : 1 where n is a natural number. Which of the following is not a possible value of n?
a) 2 b) 4 c) 5 d) 6

122. Two motorcyclists, Angad and Bali, start simultaneously from a point S on a circular track and drive around the track in same direction with speeds of 9 km/hr and 5 km/hr respectively. Every time Angad overtakes Bali (anywhere on the track), both of them decrease their respective speeds by 1 km/hr. If the length of the track is 1 km, how many times do they meet at the starting point before Bali comes to rest?
a) 0 b) 1 c) 2 d) 4

123. Anu and Vibhu start simultaneously from the same point on a circular track and run around the track in opposite directions. The radius of the track is 70m and the speeds of Anu and Vibhu are 20m/s and 10m/s respectively. Find the difference in distances travelled by Anu and Vibhu when both meet for the 9th time.
a) 440m b) 880m
c) 1320m d) 1760m

124. Arun and Barun start running simultaneously from same point on a circular track in opposite directions and with speeds in the ratio of 3 : 5 respectively. Every time they meet, they interchange their speeds and also reverse their directions. At how many distinct points on the track do they meet each other, if they run continuously?
a) 2 b) 3 c) 5 d) 8

125. Two friends A and B simultaneously start running around a circular track. They run in the same direction. A travels at 6 m/s and B runs at b m/s. If they cross each other at exactly two points on the circular track and b is a natural number less than 30, how many values can b take?
a) 3 b) 4 c) 7 d) 5

126. Three friends A, B and C decide to run around a circular track. They start at the same time and run in the same direction. A is the quickest and when A finishes a lap, it is seen that C is as much behind B as B is behind A. When A completes 3 laps, C is the exact same position on the circular track as B was

when A finished 1 lap. Find the ratio of the speeds of A, B and C?
a) 5 : 4 : 2 b) 4 : 3 : 2
c) 5 : 4 : 3 d) 3 : 2 : 1

Mixed

127. Everyday, Ram starts at 3:00 pm from his home to pick up his son from school. They reach their house at 5:00 pm. One day, school was over at 3:00 pm. Ram, not aware of this, started from home as usual. He met his son on the way and they reached home 20 minutes earlier than usual. If the speed of his car is 55 kmph, find his son's speed (in kmph).

128. Shyam's house, his office and his gym are all equidistant from each other. The distance between any 2 of them is 4 km. Shyam starts walking from his gym in a direction parallel to the road connecting his office and his house and stops when he reaches a point directly east of his office. He then reverses direction and walks till he reaches a point directly south of his office. The total distance walked by Shyam is
a) 6 km b) 9 km c) 16 km d) 12 km

129. A monkey ascends a greased pole 12 metres high. He ascends 2 metres in first minute and slips down 1 metre in the alternate minute. In which minute, he reaches the top?
a) 21st b) 22nd c) 23rd d) 24th

130. A candle of 6 cm long burns at the rate of 5 cm in 5 h and another candle of 8 cm long burns at the rate of 6 cm in 4h. What is the time required by each candle to remain of equal lengths after burning for some hours, when they start to burn simultaneously with uniform rate of burning?
a) 1 h b) 1.5 h c) 2 h d) None

131. My Scooty gives an average of 40 kmpl of petrol. But after recent filling at the new petrol pump, its average dropped to 38 kmpl. I investigated and found out that it was due to adulterated petrol. Petrol pumps add kerosene, which is 2/3 cheaper than petrol, to increase their profits. Kerosene generates excessive smoke and knocking and gives an average of 18 km per 900 ml. If I paid Rs. 30 for a litre of petrol, what was the additional amount the pump-owner was making?
a) Rs 1.75 b) Rs 1.80
c) Rs 2.30 d) Rs 2

132. The average speed of a train in the onward journey is 25% more than that in the return journey. The train halts for one hour on reaching the destination. The total time taken for the complete to and fro journey is 17 hours, covering a distance of 800 km. The speed of the train in the onward journey is:
a) 45 km/hr b) 47.5 km/hr
c) 52 km/hr d) 56.25 km/hr

133. Train X starts from point A for point B at the same time that train Y starts from B to A. Point A and B are 300 km apart. The trains are moving at a constant speed atleast at 25 km/ h. The trains meet each other 3 hours after they start. If the faster train takes atleast 2 more hours to reach the destination. By which time will the slower train have definitely reached its destination? (Ignoring the length of trains in crossing).
a) 4 hours after the start
b) 7.5 hours after the start
c) 6 hours after the start
d) None of the above

134. A beats B by 100 m in a race of 1200 m and B beats C by 200 m in a race of 1600 m. Approximately by how many metres can A beat C in a race of 9600 m?
a) 1600 m b) 1800 m
c) 1900 m d) 2400 m

135. Due to the technical snag in the signal system two trains start approaching each other on the same rail track from two different stations, 240 km away from each other. When the two trains at 60 km/h touching each time each train. The bird is initially sitting on the top of the engine of one of the trains and it moves so till these trains collide. If these trains collide one and a half hour after the start, then how many kilometers bird travels till the time of collision of trains?
a) 90 km b) 130 km
c) 120 km d) None

136. There are three runners Tom, Dick and Harry with their respective speeds of 10 km/h, 20 km/h and 30 km/h. They are initially at P and they have to run between the two points P and Q which are 10 km apart from each other. They start their race at 6 am and end at 6 pm on the same day. If they run between P and Q without any break, then how many times they will be together either at P and Q during the given time period?
a) 5 b) 7 c) 4 d) 12

137. A soldier fired two bullets at an interval of 335 seconds moving at a uniform speed v1. A terrorist who was running ahead of the soldier in the same direction, hears the two shots at an interval of 330 seconds? If the speed of sound is 1188 km/h, then who is the faster and by how much?
a) Soldier, 22 km/h
b) Terrorist, 25 km/h
c) Soldier, 18 km/h
d) Terrorist, 20 km/h

138. A man goes to the fair in Funcity with his son and faithful dog. Unfortunately man misses his son which he realizes 20 minutes later. The son comes back towards his home at the speed of 20 m/min and man follows him at 40 m/min. The dog runs to the son(child) and comes back to the man (father) to show him the direction of his son. It keeps moving to and fro at 60 m/min between son and father, till the man meets the son. What is the distance travelled by the dog in direction of the son?
a) 800 m b) 1675 m c) 848 m d) 1000 m

139. A thief sees a jeep at a distance of 250 m, coming towards him at 36 km/h. Thief takes 5 seconds to realise that there is nothing but the police is approaching him by the jeep and start running away from police at 54 km/hr. But police realize after 10 seconds, when the thief starts running away, that he is actually a thief and gives chase at 72 km/h. How long after thief saw police and catchup with him and what is the distance police had to travel to do so?
a) 50 s, 1000 m b) 65s, 1150 m
c) 65 s, 1300 m d) 45 s, 1050 m

140. In a circus there was a leopard and a tiger walking in the two different rings of same radii. There I observed that when leopard moved 3 steps, tiger moved 5 steps in the same time, but the distance traversed by leopard in 5 steps is equal to the distance traversed by tiger in 4 steps. What is the number of rounds that a leopard made when tiger completed 100 rounds
a) 120 b) 48 c) 75 d) None

141. Arti and Barkha start swimming towards each other from the deep end and shallow end respectively of a swimming pool in Funcity. They start their swimming simultaneously in the length of 300 m pool. The ratio of their speeds is 1 : 2 respectively. Each swimmer rests for 6 seconds once she reaches the other end and starts swimming back. Where will they meet for the second time in the still water of swimming pool?
a) 30 m from the shallow end
b) at the shallow end
c) at the depend
d) can't be determined

142. Kumbhakarna starts sleeping between 1 am and 2 am and he wakes up when his watch shows such a time that the two hands (i.e., hour-hand and minute-hand) interchanging the respective places. He wakes up between 2 am and 3 am on the same night. How long does he sleep?
a) 55[5/13 min] b) 110[10/13] min
c) 54 [6/13] min d) None

143. Progressive express left for New Delhi, increasing its speed in each hour. It started its journey from Lucknow, but after four hours of its journey it met with accident. Its speed in the fourth hour was7/5 times that of the third hour and the speed in the third hour was 10/7 times that of the second hour and in the second hour it was 7/5 times that of the first hour. If it would have been travelled with the half of the speed that of the third hour, then it would have gone 160 km less in the same time (i.e., in four hours). The average speed of the train during the journey of 4 hours was:
a) 50 km/hr b) 90 km/hr
c) 80 km/hr d) can't be determined

144. Two people A and B start from P and Q (distance = D) at the same time towards each other. They meet at a point R, which is at a distance 0.4 D from P. They continue to move to and fro between the two points. Find the distance from point P at which the fourth meeting takes place.
a) 0.8 D b) 0.6 D c) 0.3 D d) 0.4 D

145. Two riders on the horseback with a gun and a bullet proof shield were moving towards each other at a constant speed of 20 km/h and 5 km/h respectively. When they were 100 km apart, they started firing bullets at each other at the speed of 10 km/h. When a bullet of rider 1 hits the shield of rider 2, rider 2 fires a bullet and the process continues vice versa. Neglecting the time lag at the instant when the bullet hits the shield and the rider fires the shot, find the total distance covered by all the bullets shot by both the riders.
a) 50 km b) 40 km c) 25 km d) None

146. A passenger train departs from Ahmedabad at 6 pm for Bombay. At 9 p.m. an express train, whose average speed exceeds that of the passenger train by 15 km/h, leaves Bombay for Ahmedabad. 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 pm c) 12 midnight d)6 am

147. Anand travelled 300 km by train and 200 km by taxi. It took him 5 h and 30 min. However, if he travels 260 km by train and 240 km by taxi, he takes 6 min more. The speed of the train is
a) 100 km/h b) 120 km/h
c) 80 km/h d) 110 km/h

148. A boat takes 19 h for travelling downstream from point A to point B and coming back to a point C midway between A and B. If the velocity of the stream is 4 km/h and the speed of the boat in still water is 14 km/h, what is the distance between A and B?
a) 200 km b) 180 km
c) 160 km d) 220 km

149. Two Indian tourists in the US cycled towards each other, one from point A and the other from point B. The first tourist left point A 6 hrs later than the second left point B, and it turned out on their meeting that he had travelled 12 km less than the second tourist. After their meeting, they kept cycling with the same speed, and the first tourist arrived at B 8 hours later and the second arrived at A 9 hours later. Find the speed of the faster tourist.
a) 4 km/h b) 6 km/h
c) 9 km/h d) 2 km/h

150. A motorcyclist left point A for point B. Two hours later, another motorcyclist left A for B and arrived at B at the same time as the first motorcyclist. Had both motorcyclists started simultaneously from A and B travelling towards each other, they would have met in 80 minutes. How much time did it take the faster motorcyclist to travel from A to B?
a) 6 hours b) 3 hours
c) 2 hours d) 4 hours

151. Shaurya and Arjit take a straight route to the same terminal point and travel with constant speeds. At the initial moment, the positions of the two and the terminal point form an equilateral triangle. When

Arjit covered a distance of 80 km, the triangle becomes right-angled. When Arjit was at a distance of 120 km from the terminal point, the Shaurya arrived at the point. Find the distance between them at the initial moment assuming that there are integral distances throughout the movements described.

a) 300 km b) 240 km
c) 200 km d) 225 km

152. Three cars started simultaneously from Ajmer to Benaras along the same highway. The second car travelled with a speed that was 10 km/h higher than the first car's speed and arrived at Benaras 1 hour earlier than the first car. The third car arrived at Benaras 33.33 minutes earlier than the first car, travelling half the time at the speed of the first car and the other half at the speed of the second car. Find the total distance covered by these three cars during their journey between Ajmer and Benaras.

a) 360 km b) 600 km
c) 540 km d) 840 km

153. A pedestrian and a cyclist left Nagpur for Buti Bori at the same time. Having reached Buti Bori, the cyclist turned back and met the pedestrian an hour after the start. After their meeting, the pedestrian continued his trip to Buti Bori and cyclist turned back and also headed for Buti Bori. Having reached Buti Bori, the cyclist turned back again and met the pedestrian 30 mins after their first meeting. Determine what time it takes the pedestrian 30 mins after their first meeting. Determine what time it takes the pedestrian to cover the distance between Nagpur and Buti Bori.

a) 1 hour b) 2 hours
c) 2.5 hours d) 3 hours

CAT PAST YEAR QUESTIONS

1. Two trains cross each other in 14 seconds when running in opposite directions along parallel tracks. The faster train is 160 m long and crosses a lamp post in 12 seconds. If the speed of the other train is 6 km/hr less than the faster one, its length, in m, is **CAT 2021**
   a) 184 b) 192 c) 190 d) 180

2. Two trains A and B were moving in opposite directions, their speeds being in the ratio 5 : 3. The front end of A crossed the rear end of B 46 seconds after the front ends of the trains had crossed each other. It took another 69 seconds for the rear ends of the trains to cross each other. The ratio of length of train A to that of train B is **CAT 2021**
   a) 5 : 3 b) 2 : 3 c) 3 : 2 d) 2 : 1

3. Mira and Amal walk along a circular track, starting from the same point at the same time. If they walk in the same direction, then in 45 minutes, Amal completes exactly 3 more rounds than Mira. If they walk in opposite directions, then they meet for the first time exactly after 3 minutes. The number of rounds Mira walks in one hour is **CAT 2021**

4. Anil, Sunil, and Ravi run along a circular path of length 3 km, starting from the same point at the same time, and going in the clockwise direction. If they run at speeds of 15 km/hr, 10 km/hr, and 8 km/hr, respectively, how much distance in km will Ravi have run when Anil and Sunil meet again for the first time at the starting point? **CAT 2020**
   a) 4.6 b) 4.2 c) 4.8 d) 5.2

5. A and B are two railway stations 90 km apart. A train leaves A at 9:00 am, heading towards B at a speed of 40 km/hr. Another train leaves B at 10:30 am, heading towards A at a speed of 20 km/hr. The trains meet each other at **CAT 2020**
   a) 11 : 20 am b) 11 : 00 am
   c) 10 : 45 am d) 11 : 45 am

6. Vimla starts for office every day at 9 am and reaches exactly on time if she drives at her usual speed of 40 km/hr. She is late by 6 minutes if she drives at 35 km/hr. One day, she covers two-thirds of her distance to office in one-thirds of her usual time to reach office, and then stops for 8 minutes. The speed, in km/hr, at which she should drive the remaining distance to reach office exactly on time is **CAT 2020**
   a) 27 b) 28 c) 29 d) 26

7. In a car race, car A beats car B by 45 km, car B beats car C by 50 km, and car A beats car C by 90 km. The distance (in km) over which the race has been conducted is **CAT 2020**
   a) 550 b) 475 c) 500 d) 450

8. The distance from B to C is thrice that from A to B. Two trains travel from A to C via B. The speed of train 2 is double that of train 1 while traveling from A to B and their speeds are interchanged while traveling from B to C. The ratio of the time taken by train 1 to that taken by train 2 in travelling from A to C is **CAT 2020**
   a) 7:5 b) 4:1 c) 1:4 d) 5:7

9. Two circular tracks T1 and T2 of radii 100 m and 20 m, respectively touch at a point A. Starting from A at the same time, Ram and Rahim are walking on track T1 and track T2 at speeds 15 km/hr and 5 km/hr respectively. The number of full rounds that Ram will make before he meets Rahim again for the first time is **CAT 2020**
   a) 5 b) 3 c) 4 d) 2

10. A and B are two points on a straight line. Ram runs from A to B while Rahim runs from B to A. After crossing each other, Ram and Rahim reach their destinations in one minutes and four minutes, respectively. If they start at the same time, then the ratio of Ram's speed to Rahim's speed is **CAT 2020**
    a) 2 b) $2\sqrt{2}$ c) $\sqrt{2}$ d) 1212

11. A train travelled at one-thirds of its usual speed, and hence reached the destination 30 minutes after the scheduled time. On its return journey, the train initially travelled at its usual speed for 5 minutes but then stopped for 4 minutes for an emergency. The percentage by which the train must now increase its usual speed so as to reach the destination at the scheduled time, is nearest to **CAT 2020**
    a) 58 b) 67 c) 50 d) 61

12. A straight road connects points A and B. Car 1 travels from A to B and Car 2 travels from B to A, both leaving at the same time. After meeting each other, they take 45 minutes and 20 minutes, respectively, to complete their journeys. If Car 1 travels at the speed of 60 km/hr, then the speed of Car 2, in km/hr, is **CAT 2020**
    a) 90 b) 80 c) 70 d) 100

13. Two persons are walking beside a railway track at respective speeds of 2 and 4 km per hour in the same direction. A train came from behind them and crossed them in 90 and 100 seconds, respectively. The time, in seconds, taken by the train to cross an electric post is nearest to **CAT 2020**
    a) 87 b) 82 c) 78 d) 75

14. Leaving home at the same time, Amal reaches office at 10:15 am if he travels at 8kmph, and at 9:40 am if he travels at 15kmph. Leaving home at 9:10 am, at what speed, in kmph, must he travel so as to reach office exactly at 10:00 am? **CAT 2020**
    a) 12 b) 11 c) 13 d) 14

15. A cyclist leaves A at 10 am and reaches B at 11 am. Starting from 10:01 am, every minute a motorcycle leaves A and moves towards B. Forty-five such motorcycles reach B by 11 am. All motorcycles have the same speed. If the cyclist had doubled his speed, how many motorcycles would have reached B by the time the cyclist reached B? **CAT 2019**
    a) 22 b) 20 c) 15 d) 23

16. John jogs on track A at 6 kmph and Mary jogs on track B at 7.5 kmph. The total length of tracks A and B is 325 metres. While John makes 9 rounds of track A, Mary makes 5 rounds of track B. In how many seconds will Mary make one round of track A? [TITA] **CAT 2019**

17. Two ants A and B start from a point P on a circle at the same time, with A moving clock-wise and B moving anti-clockwise. They meet for the first time at 10:00 am when A has covered 60% of the track. If A returns to P at 10:12 am, then B returns to P at **CAT 2019**

a) 10:27 am b) 10:25 am
c) 10:45 am d) 10:18 am

18. Two cars travel the same distance starting at 10:00 am and 11:00 am, respectively, on the same day. They reach their common destination at the same point of time. If the first car travelled for at least 6 hours, then the highest possible value of the percentage by which the speed of the second car could exceed that of the first car is **CAT 2019**

a) 20 b) 10 c) 35 d) 25

19. In a race of three horses, the first beat the second by 11 metres and the third by 90 metres. If the second beat the third by 80 metres, what was the length, in metres, of the racecourse? [TITA] **CAT 2019**

20. One can use three different transports which move at 10, 20, and 30 kmph, respectively. To reach from A to B, Amal took each mode of transport 1/3 of his total journey time, while Bimal took each mode of transport 1/3 of the total distance. The percentage by which Bimal's travel time exceeds Amal's travel time is nearest to **CAT 2019**

a) 22 b) 19 c) 21 d) 20

21. The wheels of bicycles A and B have radii 30 cm and 40 cm, respectively. While traveling a certain distance, each wheel of A required 5000 more revolutions than each wheel of B. If bicycle B traveled this distance in 45 minutes, then its speed, in km per hour, was **CAT 2019**

a) 18π b) 16π c) 12π d) 14π

22. Points A, P, Q and B lie on the same line such that P, Q and B are, respectively, 100 km, 200 km and 300 km away from A. Cars 1 and 2 leave A at the same time and move towards B. Simultaneously, car 3 leaves B and moves towards A. Car 3 meets Car 1 at Q, and Car 2 at P. If each car is moving in uniform speed then the ratio of the speed of Car 2 to that of Car 1 is **CAT 2018**

a) 1 : 4 b) 2 : 9 c) 1 : 2 d) 2 : 7

23. On a long stretch of east-west road, A and B are two points such that B is 350 km west of A. One car starts from A and another from B at the same time. If they move towards each other, then they meet after 1 hour. If they both move towards east, then they meet in 7 hrs. The difference between their speeds, in km per hour, is (TITA) **CAT 2018**

24. Points A and B are 150 km apart. Cars 1 and 2 travel from A to B, but car 2 starts from A when car 1 is already 20 km away from A. Each car travels at a speed of 100 kmph for the first 50 km, at 50 kmph for the next 50 km, and at 25 kmph for the last 50 km. The distance, in km, between car 2 and B when car 1 reaches B is (TITA) **CAT 2018**

25. The distance from A to B is 60 km. Partha and Narayan start from A at the same time and move towards B. Partha takes four hours more than Narayan to reach B. Moreover, Partha reaches the mid-point of A and B two hours before Narayan reaches B. The speed of Partha, in km per hour, is **CAT 2018**

a) 6 b) 3 c) 4 d) 5

26. Point P lies between points A and B such that the length of BP is thrice that of AP. Car 1 starts from A and moves towards B. Simultaneously, car 2 starts from B and moves towards A. Car 2 reaches P one hour after car 1 reaches P. If the speed of car 2 is half that of car 1, then the time, in minutes, taken by car 1 in reaching P from A is:[TITA] **CAT 2018**

27. Train T leaves station X for station Y at 3 pm. Train S, traveling at three quarters of the speed of T, leaves Y for X at 4 pm. The two trains pass each other at a station Z, where the distance between X and Z is three-fifths of that between X and Y. How many hours does train T take for its journey from X to Y? [TITA] **CAT 2018**

28. In a 10 km race. A, B, and C, each running at uniform speed, get the gold, silver, and bronze medals, respectively. If A beats B by 1 km and B beats C by 1 km, then by how many metres does A beat C? [TITA] **CAT 2017**

29. Arun drove from home to his hostel at 60 miles per hour. While returning home he drove half way along the same route at a speed of 25 miles per hour and then took a bypass road which increased his driving distance by 5 miles, but allowed him to drive at 50 miles per hour along this bypass road. If his return journey took 30 minutes more than his onward journey, then the total distance travelled by him is: **CAT 2017**

a) 55 miles b) 60 miles
c) 65 miles d) 70 miles

30. A motorbike leaves point A at 1 pm and moves towards point B at a uniform speed. A car leaves point B at 2 pm and moves towards point A at a uniform speed which is double that of the motorbike. They meet at 3:40 pm at a point which is 168 km away from A. What is the distance, in km, between A and B? **CAT 2017**

a) 364 b) 378 c) 380 d) 388

31. A man leaves his home and walks at a speed of 12 km per hour, reaching the railway station 10 minutes after the train had departed. If instead he had walked at a speed of 15 km per hour, he would have reached the station 10 minutes before the train's departure.

The distance (in km) from his home to the railway station is: (TITA) **CAT 2017**

32. A man travels by a motor boat down a river to his office and back. With the speed of the river unchanged, if he doubles the speed of his motor boat, then his total travel time gets reduced by 75%. The ratio of the original speed of the motor boat to the speed of the river is: **CAT 2017**
a) $\sqrt{6} : \sqrt{2}$ b) $\sqrt{7} : 2$
c) $2\sqrt{5} : 3$ d) 3 : 2

ANSWER KEY

1. a) C b) a	2. 63 km	3. A	4. B	5. B	6. B
7. A	8. B	9. B	10. B	11. C	12. C
13. A	14. C	15. C	16. 30 min	17. A	18. 120 km
19. 2.5 km & 13 min	20. 80 min	21. 80 km/h	22. 90 km	23. A	24. C
25. C	26. C	27. B	28. A	29. C	30. C
31. C	32. D	33. 360 km	34. A	35. C	36. 48 km/h
37. a) 85 kmph b) 95 kmph	38. 600/13 km/h	39. C	40. C	41. A	42. 180 & 120
43. B	44. B	45. 5 hrs	46. B	47. B	48. 1200 m from P
49. 11:30 am	50. 120 km	51. 432 m	52. D	53. D	54. C
55. C	56. C	57. B	58. 4 hr 48 min	59. 320 m	60. 240 m
61. C	62. 1, 2.5, 3 sec	63. $5\sqrt{2}$ m/s	64. A	65. a) 15 km b) 12.5 km	66. D
67. A	68. D	69. A	70. A	71. B	72. C
73. C	74. A	75. A	76. A	77. A	78. B
79. C	80. C	81. 15	82. B	83. C	84. D
85. D	86. D	87. A	88. A	89. B	90. A
91. B	92. A	93. 48 S	94. 120 S	95. 120/7 Sec	96. A
97. A	98. D	99. A	100. Dead Heat (Both Wins)	101. D	102. D
103. D	104. B	105. i) a ii) b	106. 40 sec	107. i) 48 min ii) 48 min	108. A
109. i) 75 sec ii) 8	110. C	111. a) 44 km b) 308 km	112. A	113.	114. A
115. C	116. C	117. 600	118. 325 sec	119. 266 2/3 sec	120. C
121. D	122. B	123. C	124. D	125. A	126. C
				127. 11 km/h	128. C
129. A	130. D	131. D	132. D	133. B	134. C
135. A	136. B	137. C	138. D	139. B	140. B
141. B	142. A	143. B	144. A	145. B	146. D
147. A	148. B	149. B	150. C	151. B	152. B
153. B					

ANSWER KEY (CAT PAST YEAR QUESTIONS)

1. C	2. C	3. 8	4. C	5. B	6. B	7. D	8. D
9. B	10. A	11. B	12. A	13. B	14. A	15. C	16. 48
17. A	18. A	19. 880	20. A	21. B	22. A	23. 50	24. 5
25. D	26. 12	27. 15	28. 1900	29. C	30. B	31. 20	32. B