L17 : Application of Time Speed Distance

1-Tut : Speed Of Train

Send Feedback

A train, 300m long, passed a man, walking along the line in the same direction at the rate of 3 km/hr in 33 seconds. The speed of the train is:

Options

This problem has only one correct answer

30 km/hr
32 km/hr
(360/11) km/hr
(393/11) km/hr

Correct Answer : D

Solution Description

If the speed of the train be s km/hr, then relative speed = (s – 3)km/hr or (s-3)*(5/18)m/sec
∴300/(s-3)*(5/18)=33
⇒5400=33×5(s-3)

⇒11s-33=360⇒s=393/11 km/hr

2-Tut : Find train speed?

Send Feedback

A train 100 metres long meets a man going in opposite direction at 5 km/hr and passes him in (36/5)seconds. What is the speed of the train in km/hr?

Options

This problem has only one correct answer

45 km/hr

60 km/hr

55 km/hr

50 km/hr

Correct Answer : A

Solution Description

Speed of train = x km/hr
Relative speed = (x + 5) km/hr

Length of train = 100m=0.1 km.
∴0.1/(x+5)=36/(5×60×60)
1/(x+5)=1/50
⇒x+5=50

⇒x=45 km/hr

3-Tut : Speed passing telegraph post

Send Feedback

A train, 120 m long, takes 6 seconds to pass a telegraph post, the speed of train is

Options

This problem has only one correct answer

72 km/hr
62 km/hr
55 km/hr
85 km/hr

Correct Answer : A

Solution Description

Speed of train = Length of train/Time taken in crossing the pole =120/6=20 m/sec = 20×18/5=72 km/hr. Hence, option a is correct.

4-Tut : Average speed of whole journey

Send Feedback

A train goes from Ballugunge to Sealdah at an average speed of 20 km/hr and comes back at an average speed of 30 km/hr. The average speed of the train for the whole journey is

Options

This problem has only one correct answer

27 km/hr
26 km/hr
25 km/hr
24 km/hr

Correct Answer : D

Solution Description

Let S1 and S2 be the average speed of train Ballugunge to Sealdah and Sealdah to Ballugunge respectively. Then, Required average Speed: 2.S1.S2/(S1+S2) = 2x20x30/(20+30) = 24km/hr.

Hence, option (d) is correct.

5-Tut : Time To Cross Each Other

Send Feedback

Two trains 108m and 112m in length are running towards each other on the parallel lines at a speed of 45 km/hr and 54 km/hr respectively. To cross each other after they meet, it will take

Options

This problem has only one correct answer

12 sec
9 sec
8 sec
10 sec

Correct Answer : C

Solution Description

Relative speed = 45 + 54 = 99 km/hr= 99×5/18 m/sec or 55/2 m/sec

∴ Required time = ((108+112)/(55/2))=(220×2)/55=8 seconds. Hence, option(c) is correct.

6-Tut : Speed Of Faster Train

Send Feedback

Two trains, each 100 m long, moving in opposite directions, cross each other in 8 seconds. If one is moving twice as fast the other, then the speed of the faster train is:

Options

This problem has only one correct answer

50 km/hr
55 km/hr
60 km/hr
65 km/hr

Correct Answer : C

Solution Description

Let the speed of the slower train be x m/sec .

Then, speed of the faster train be 2x m/sec .
Relative speed of both Trains = (x + 2x) m/sec = 3x m/sec .
Now according to the question:
(100+100)/8=3x⇔24x=200⇔x=25/3 m/s

So, speed of the faster train = 2×25/3 m/sec or(50/3*18/5) km/hr = 60 km/hr. Hence, option c is correct.

7-Tut : Original Speed Of Train

Send Feedback

A train travels at a certain average speed for distance of 63 km and then travels a distance of 72 km at an average speed of 6 km/hr more than its original speed. If it takes 3 hours to complete the total journey, what is the original speed of the train in km/hr.?

Options

This problem has only one correct answer

24
33
42
66

Correct Answer : C

Solution Description

The following equation can be formed from the equation,

63/s + 72/(s+6) =3

Solve the equation to get,

s = 42 km/hr. Hence, option c is correct.

8-Tut : Distance Between Two Points

Send Feedback

A boat moves with a speed of 5 kmph in still water. When the river flows at 1kmph, the boat takes 80 minutes to go from a point A to B and come back. What is the distance between the two points?

Options

This problem has only one correct answer

3 km
2.4 km
3.2 km
2.8 km

Correct Answer : C

Solution Description

As the distance is constant here, so the speed is inversely proportional to the time taken.
Downstream speed = (5+1) kmph = 6 kmph
Upstream speed = (5 – 1) kmph = 4 kmph
Ratio of Downstream speed: Upstream speed = 6:4
So, the time taken in Downstream journey: Upstream journey = 4:6
So, the time taken in Downstream journey = 4/10 × 80 = 32 minutes

So, the distance = 32/60 × 6 = 3.2 kms. Hence, option c is correct.

9-Tut : How Far Is The Place?

Send Feedback

Arjun can swim at 10kmph in still water. If the velocity of water is 4kmph and it takes him 10 hours to swim to a place and come back, how far is the place?

Options

This problem has only one correct answer

24 km
32 km

42 km
48 km

Correct Answer : C

Solution Description

Let the place is D km away from the original position of Arjun. According to the question:
((D/(10+4))+(D/(10-4))=10 OR D/14+D/6=10

Now by putting the options in the above equation or by solving the above equation we get D= 42 km. Hence, option c is correct.

10-Tut : Speed Of Current

Send Feedback

A boat goes 6 km in one hour in still water, but takes thrice as much time in going the same distance against the current. The speed of current (in kmph) is:

Options

This problem has only one correct answer

2
3
4
5

Correct Answer : C

Solution Description

Speed of boat in still water = 6 km / hour

Let the distance = x km

Time taken = x/6 hrs

Time is going the same distance against the current = 3x/6=x/2 hrs

Let the speed of the current = y km/hr

Speed against the current = 6−y km/hr

Time taken for distance x= x/(6−y) hrs.

hence x/2=x/(6−y)

so, (6−y) = 2

and y= 4 km/hr

Hence Speed pf the current = y km/hr =4 km/hr

11-Tut : Coincide Each Other

Send Feedback

At what time between 2 and 3 o'clock will the hands of a clock coincide each other?

Options

This problem has only one correct answer

10 minutes 120/11 seconds
10 minutes 600/11 seconds
9 minutes 20/11 seconds
None of These

Correct Answer : B

Solution Description

if 3600 is equivalent to 60 km.
Speed of the minute hand= 60 kmph
Speed of the hour hand= 5 kmph.
Initial distance between minute and hour hand= 10 km.
Final distance between minute and hour hand= 0 km.
Relative speed of minute and hour hand= 55 kmph
Required time= 10/55hours or 600/55 minutes or 10 minutes 600/11 seconds.

Hence both hands coincide each other after 10 minutes 600/11 seconds. Hence, option b is correct.

12-Tut : Form An Angle

Send Feedback

At what time between 2 and 3 o'clock will the hands of a clock form an angle of 90 from each other?

Options

This problem has only one correct answer

2:27:81.81
2:27:16.36
2:27
None Of These

Correct Answer : B

Solution Description

Initial distance between minute and hour hand= 10 km.
Final distance between minute and hour hand= 15 km.
Relative speed of minute and hour hand= 55 kmph

Required time= (15+10)/55=25/55hours or (25*60)/55 minutes or 27 minutes 16.36 seconds. Hence, option b is correct.

13-Tut : Number Of Right Angle

Send Feedback

Find the number of right angle formed by a clock in a day?

Options

This problem has only one correct answer

48
44
23
24

Correct Answer : B

Solution Description

A clock makes 2 right angles between any 2 hours. thus, for instance there are 2 right angles formed between 12 and 1 or between 1 and 2 and so on. Therefore clock makes 4 right angles in two hours time period. But this statement is not true for 2-4 and for 8-10, because with in this interval there are not 4 but 3 right angles. This happen because second right angle between 2 and 3 and 1st right angle between 3-4 are same. Similarly second right angle between 8-9 and first right angle between 9-10 are same.

Hence there are total 48- 4= 44 right angles formed by the clock in a 24 hours period. Hence, option b is correct.

14-Tut : Ratio Of Speeds

Send Feedback

In a 100 m race Aman wins over Bharat by 8 m. or by 1 s. Bharat can give a start of 10m to Chiraag in 100 m race. Now answer the following questions: Find the ratio of speeds of Aman, Bharat, Chirag.

Options

This problem has only one correct answer

1000:900:828
1000:920:828
1000:920:818
None Of These

Correct Answer : B

Solution Description

Ratio of speeds of Aman and Bharat = 100:100-8=100:92
Ratio of speeds of Bharat and Chirag = 100:100-10=100:90
So ratio of speeds Anuj, Bharat, Chirag =1000:920:828

Hence, option b is correct.

15-Tut : By how much time?

Send Feedback

In a 100 m race Aman wins over Bharat by 8 m. or by 1 s. Bharat can give a start of 10m to Chirag in 100 m race. Now answer the following questions:

By how much time Aman will win over Chirag in a 1 km race.

Options

This problem has only one correct answer

20.5s
21.5s
22s

None Of These

Correct Answer : B

Solution Description

Ratio of speeds of Aman to Chirag = 1000:828 =1000:828

So in a 1 km race Anuj will win by 172 m. speed of Aman = 81=8m/s

So Aman will win over Chirag by 1728=21.5 s. Hence, option b is correct.

16-Tut : Length Of Race Track

Send Feedback

If the ratio of speeds of A and B is 3: 5 and A loses the race by 50 m, then what is the length of the race track?

Options

This problem has only one correct answer

100m
125m
150m
175m

Correct Answer : B

Solution Description

In a 5 m race B will win the race by 2 m. (Ratio of speeds of A and B is 3: 5)
So if B will win the race by 50 m then the length of race track = 50×5/2=125 m

Hence, option b is correct.

17-Tut : Length Of Track

Send Feedback

The ratio of time taken by A and B to run a certain distance is 1: 3 and A wins the race by 100 m then the length of race track is:

Options

This problem has only one correct answer

100m
125m
150m
175m

Correct Answer : C

Solution Description

Ratio of speed of A and B is 3:1.

So in a 3m race A wins by 2 m. so when A wins by 100m then length of the race track = 100×3/2=150 m.
Hence, option c is correct.