

1. A train is running at a speed of 40 km/hr and it crosses a post in 18 seconds. What is the length of the train?

A. 190 metres

B. 160 metres

C. 200 metres

D. 120 metres

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Answer : Option C

Explanation :

Speed of the train, $v = 40 \text{ km/hr} = \frac{40000}{3600} \text{ m/s} = \frac{400}{36} \text{ m/s}$

Time taken to cross, $t = 18 \text{ s}$

Distance Covered, $d = vt = (\frac{400}{36}) \times 18 = 200 \text{ m}$

Distance covered is equal to the length of the train = 200 m

2. A train ,130 meters long travels at a speed of 45 km/hr crosses a bridge in 30 seconds. The length of the bridge is

A. 270 m

B. 245 m

C. 235 m

D. 220 m

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Answer : Option B

Explanation :

Assume the length of the bridge = x meter

Total distance covered = $130+x$ meter

total time taken = 30s

speed = Total distance covered /total time taken = $(130+x)/30 \text{ m/s}$

$$\Rightarrow 45 \times (\frac{10}{36}) = (130+x)/30$$

$$\Rightarrow 45 \times 10 \times 30 /36 = 130+x$$

$$\Rightarrow 45 \times 10 \times 10 / 12 = 130+x$$

$$\Rightarrow 15 \times 10 \times 10 / 4 = 130+x$$

$$\Rightarrow 15 \times 25 = 130+x = 375$$

$$\Rightarrow x = 375-130 = 245$$

3. A train has a length of 150 meters . it is passing a man who is moving at 2 km/hr in the same direction of the train, in 3 seconds. Find out the speed of the train.

A. 182 km/hr

B. 180 km/hr

C. 152 km/hr

D. 169 km/hr

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Answer : Option A

Explanation :

Length of the train, $l = 150\text{m}$

Speed of the man , $V_m = 2 \text{ km/hr}$

Relative speed, $V_r = \text{total distance/time} = (150/3) \text{ m/s} = (150/3) \times (18/5) = 180 \text{ km/hr}$

Relative Speed = Speed of train, V_t - Speed of man (As both are moving in the same direction)

$$\Rightarrow 180 = V_t - 2$$

$$\Rightarrow V_t = 180 + 2 = 182 \text{ km/hr}$$

4. A train having a length of 240 m passes a post in 24 seconds. How long will it take to pass a platform having a length of 650 m?

A. 120 sec

B. 99 s

C. 89 s

D. 80 s

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Answer : Option C

Explanation :

$$v = 240/24 \text{ (where } v \text{ is the speed of the train)} = 10 \text{ m/s}$$

$$t = (240+650)/10 = 89 \text{ seconds}$$

5. A train 360 m long runs with a speed of 45 km/hr. What time will it take to pass a platform of 140 m long?

A. 38 sec

B. 35 s

C. 44 sec

D. 40 s

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Answer : Option D

Explanation :

$$\text{Speed} = 45 \text{ km/hr} = 45 \times (10/36) \text{ m/s}$$

$$= 150/12 = 50/4 = 25/2 \text{ m/s}$$

Total distance = length of the train + length of the platform

$$= 360 + 140 = 500 \text{ meter}$$

$$\text{Time taken to cross the platform} = 500 / (25/2) = 500 \times 2/25 = 40 \text{ seconds}$$

6. Two trains running in opposite directions cross a man standing on the platform in 27 seconds and 17 seconds respectively . If they cross each other in 23 seconds, what is the ratio of their speeds?

A. Insufficient data

B. 3 : 1

C. 1 : 3

D. 3 : 2

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Answer : Option D

Explanation :

Let the speed of the trains be x and y respectively

$$\text{length of train1} = 27x$$

$$\text{length of train2} = 17y$$

$$\text{Relative speed} = x + y$$

$$\text{Time taken to cross each other} = 23 \text{ s}$$

$$\Rightarrow (27x + 17y) / (x + y) = 23$$

$$\Rightarrow (27x + 17y) / = 23(x + y)$$

$$\Rightarrow 4x = 6y$$

$$\Rightarrow x/y = 6/4 = 3/2$$

7. A jogger is running at 9 kmph alongside a railway track in 240 meters ahead of the engine of a 120 meters long train . The train is running at 45 kmph in the same direction. how much time does it take for the train to pass the jogger?

A. 46

B. 36

C. 18

D. 22

$$\text{Distance} = 140 + 160 = 300 \text{ m}$$

$$\text{Relative speed} = 60 + 40 = 100 \text{ km/hr} = (100 \times 10) / 36 \text{ m/s}$$

$$\text{Time} = \text{distance} / \text{speed} = 300 / (100 \times 10) / 36 = 300 \times 36 / 1000 = 3 \times 36 / 10 = 10.8 \text{ s}$$

10. Two trains are moving in opposite directions with speed of 60 km/hr and 90 km/hr respectively. Their lengths are 1.10 km and 0.9 km respectively. the slower train cross the faster train in --- seconds

- A. 56
B. 48
C. 47
D. 26

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Answer : Option B

Explanation :

Relative speed = 60+90 = 150 km/hr (Since both trains are moving in opposite directions)

Total distance = 1.1+.9 = 2km

Time = 2/150 hr = 1/75 hr = 3600/75 seconds = 1200/25 = 240/5 = 48 seconds

11. A train passes a platform in 36 seconds. The same train passes a man standing on the platform in 20 seconds. If the speed of the train is 54 km/hr, The length of the platform is

- A. None of these
B. 280 meter
C. 240 meter
D. 200 meter

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Answer : Option C

Explanation :

Speed of the train = 54 km/hr = (54×10)/36 m/s = 15 m/s

Length of the train = speed × time taken to cross the man = 15×20 = 300 m

Let the length of the platform = L

Time taken to cross the platform = (300+L)/15

$$\Rightarrow (300+L)/15 = 36$$

$$\Rightarrow 300+L = 15 \times 36 = 540$$

$$\Rightarrow L = 540 - 300 = 240 \text{ meter}$$

12. A train moves past a post and a platform 264 m long in 8 seconds and 20 seconds respectively. What is the speed of the train?

A. 79.2 km/hr

B. 69 km/hr

C. 74 km/hr

D. 61 km/hr

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Answer : Option A

Explanation :

Let x is the length of the train and v is the speed

Time taken to move the post = 8 s

$$\Rightarrow x/v = 8$$

$$\Rightarrow x = 8v \text{ --- (1)}$$

Time taken to cross the platform 264 m long = 20 s

$$(x+264)/v = 20$$

$$\Rightarrow x + 264 = 20v \text{ ---(2)}$$

Substituting equation 1 in equation 2, we get

$$8v + 264 = 20v$$

$$\Rightarrow v = 264/12 = 22 \text{ m/s}$$

$$= 22 \times 36/10 \text{ km/hr} = 79.2 \text{ km/hr}$$

13. Two trains having equal lengths, take 10 seconds and 15 seconds respectively to cross a post. If the length of each train is 120 meters, in what time (in seconds) will they cross each other when traveling in opposite direction?

A. 10

B. 25

C. 12

D. 20

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Answer : Option C

Explanation :

$$\text{speed of train1} = 120/10 = 12 \text{ m/s}$$

$$\text{speed of train2} = 120/15 = 8 \text{ m/s}$$

$$\text{if they travel in opposite direction, relative speed} = 12+8 = 20 \text{ m/s}$$

$$\text{distance covered} = 120+120 = 240 \text{ m}$$

$$\text{time} = \text{distance/speed} = 240/20 = 12 \text{ s}$$

14. Two trains, one from P to Q and the other from Q to P, start simultaneously. After they meet, the trains reach their destinations after 9 hours and 16 hours respectively. The ratio of their speeds is

A. 2 : 3

B. 2 : 1

C. 4 : 3

D. 3 : 2

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Answer : Option C

Explanation :

Ratio of their speeds = Speed of first train : Speed of second train

$$= \frac{\sqrt{16}}{\sqrt{9}}$$

$$= 4:3$$

15. A train having a length of $\frac{1}{4}$ mile, is traveling at a speed of 75 mph. It enters a tunnel $3\frac{1}{2}$ miles long. How long does it take the train to pass through the tunnel from the moment the front enters to the moment the rear emerges?

A. 3 min

B. 4.2 min

C. 3.4 min

D. 5.5 min

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Answer : Option A

Explanation :

$$\text{Total distance} = 3\frac{1}{2} + \frac{1}{4} = \frac{7}{2} + \frac{1}{4} = \frac{15}{4} \text{ miles}$$

$$\text{Speed} = 75 \text{ mph}$$

$$\text{Time} = \text{distance/speed} = \frac{(15/4)}{75} \text{ hr} = \frac{1}{20} \text{ hr} = \frac{60}{20} \text{ minutes} = 3 \text{ minutes}$$

16. A train runs at the speed of 72 kmph and crosses a 250 m long platform in 26 seconds. What is

the length of the train?

A. 270 m

B. 210 m

C. 340 m

D. 130 m

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Answer : Option A

Explanation :

$$\text{Speed} = 72 \text{ kmph} = 72 \times 10/36 = 20 \text{ m/s}$$

Distance covered = $250 + x$ where x is the length of the train

$$\text{Time} = 26 \text{ s}$$

$$(250+x)/26 = 20$$

$$250+x = 26 \times 20 = 520 \text{ m}$$

$$x = 520 - 250 = 270 \text{ m}$$

17. A train overtakes two persons who are walking in the same direction to that of the train at 2 kmph and 4 kmph and passes them completely in 9 and 10 seconds respectively. What is the length of the train?

A. 62 m

B. 54 m

C. 50 m

D. 55 m

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Answer : Option C

Explanation :

Let x is the length of the train in meter and v is its speed in kmph

$$x/9 = (v-2)(10/36) \text{ ---(1)}$$

$$x/10 = (v-4)(10/36) \text{ --- (2)}$$

Dividing equation 1 with equation 2

$$10/9 = (v-2)/(v-4)$$

$$\Rightarrow 10v - 40 = 9v - 18$$

$$\Rightarrow v = 22$$

$$\text{Substituting in equation 1, } x/9 = 200/36 \Rightarrow x = 9 \times 200/36 = 50 \text{ m}$$

18. A train is traveling at 48 kmph . It crosses another train having half of its length , traveling in opposite direction at 42 kmph, in 12 seconds. It also passes a railway platform in 45 seconds. What is the length of the platform?

A. 500 m

B. 360 m

C. 480 m

D. 400 m

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Answer : Option D

Explanation :

Speed of train1 = 48 kmph

Let the length of train1 = $2x$ meter

Speed of train2 = 42 kmph

Length of train 2 = x meter (because it is half of train1's length)

Distance = $2x + x = 3x$

Relative speed = $48 + 42 = 90$ kmph = $90 \times \frac{10}{36}$ m/s = 25 m/s

Time = 12 s

Distance/time = speed $\Rightarrow 3x/12 = 25$

$\Rightarrow x = 25 \times 12/3 = 100$ meter

Length of the first train = $2x = 200$ meter

Time taken to cross the platform = 45 s

Speed of train1 = 48 kmph = $480/36 = 40/3$ m/s

Distance = $200 + y$ where y is the length of the platform

$\Rightarrow 200 + y = 45 \times 40/3 = 600$

$\Rightarrow y = 400$ meter

19. A train having a length of 270 meter is running at the speed of 120 kmph . It crosses another train running in opposite direction at the speed of 80 kmph in 9 seconds. What is the length of the other train?

A. 320 m

B. 190 m

C. 210 m

D. 230 m

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Answer : Option D

Explanation :

$$\text{Relative speed} = 120 + 80 = 200 \text{ kmph} = 200 \times 10/36 \text{ m/s} = 500/9 \text{ m/s}$$

$$\text{time} = 9 \text{ s}$$

Total distance covered = 270 + x where x is the length of other train

$$(270 + x)/9 = 500/9$$

$$\Rightarrow 270 + x = 500$$

$$\Rightarrow x = 500 - 270 = 230 \text{ meter}$$

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

A. 75 km/hr

B. 60 km/hr

C. 35 km/hr

D. 70 km/hr

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Answer : Option B

Explanation :

$$\text{Total distance covered} = 100 + 100 = 200 \text{ m}$$

$$\text{Time} = 8 \text{ s}$$

let speed of slower train is v . Then the speed of the faster train is $2v$

(Since one is moving twice as fast the other)

$$\text{Relative speed} = v + 2v = 3v$$

$$3v = 200/8 \text{ m/s} = 25 \text{ m/s}$$

$$\Rightarrow v = 25/3 \text{ m/s}$$

$$\text{Speed of the faster train} = 2v = 50/3 \text{ m/s} = (50/3) \times (36/10) \text{ km/hr} = 5 \times 36/3 = 5 \times 12 = 60 \text{ km/hr}$$

21. Two stations P and Q are 110 km apart on a straight track. One train starts from P at 7 a.m. and travels towards Q at 20 kmph. Another train starts from Q at 8 a.m. and travels towards P at a speed of 25 kmph. At what time will they meet?

A. 10.30 a.m

B. 10 a.m.

C. 9.10 a.m.

D. 11 a.m.

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Answer : Option B

Explanation :

Assume both trains meet after x hours after 7 am

Distance covered by train starting from P in x hours = $20x$ km

Distance covered by train starting from Q in $(x-1)$ hours = $25(x-1)$

Total distance = 110

$$\Rightarrow 20x + 25(x-1) = 110$$

$$\Rightarrow 45x = 135$$

$$\Rightarrow x = 3$$

Means, they meet after 3 hours after 7 am, ie, they meet at 10 am

22. A train overtakes two persons walking along a railway track. The first person walks at 4.5 km/hr and the other walks at 5.4 km/hr. The train needs 8.4 and 8.5 seconds respectively to overtake them. What is the speed of the train if both the persons are walking in the same direction as the train?

A. 81 km/hr

B. 88 km/hr

C. 62 km/hr

D. 46 km/hr

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Answer : Option A

Explanation :

Let x is the length of the train in meter and y is its speed in kmph

$$x/8.4 = (y-4.5)(10/36) \text{ ---(1)}$$

$$x/8.5 = (y-5.4)(10/36) \text{ ---(2)}$$

Dividing 1 by 2

$$8.5/8.4 = (y-4.5)/(y-5.4)$$

$$\Rightarrow 8.4y - 8.4 \times 4.5 = 8.5y - 8.5 \times 5.4$$

$$.1y = 8.5 \times 5.4 - 8.4 \times 4.5$$

$$\Rightarrow .1y = 45.9 - 37.8 = 8.1$$

$$\Rightarrow y = 81 \text{ km/hr}$$

23. A train, having a length of 110 meter is running at a speed of 60 kmph. In what time, it will pass a man who is running at 6 kmph in the direction opposite to that of the train

- A. 10 sec
B. 8 sec
C. 6 sec
D. 4 sec

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Answer : Option C

Explanation :

Distance = 110 m

Relative speed = $60+6 = 66$ kmph (Since both the train and the man are in moving in opposite direction)

$$= 66 \times 10/36 \text{ mps} = 110/6 \text{ mps}$$

$$\text{Time} = \text{distance/speed} = 110/(110/6) = 6 \text{ s}$$

24. A 300 metre long train crosses a platform in 39 seconds while it crosses a post in 18 seconds. What is the length of the platform?

- A. 150 m
B. 350 m
C. 420 m
D. 600 m

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Answer : Option B

Explanation :

Length of the train = distance covered in crossing the post = speed \times time = speed \times 18

$$\text{Speed of the train} = 300/18 \text{ m/s} = 50/3 \text{ m/s}$$

Time taken to cross the platform = 39 s

$$(300+x)/(50/3) = 39 \text{ s where } x \text{ is the length of the platform}$$

$$300+x = (39 \times 50) / 3 = 650 \text{ meter}$$

$$x = 650-300 = 350 \text{ meter}$$

25. A train crosses a post in 15 seconds and a platform 100 m long in 25 seconds. Its length is

A. 150 m

B. 300 m

C. 400 m

D. 180 m

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Answer : Option A

Explanation :

Assume x is the length of the train and v is the speed

$$x/v = 15 \Rightarrow v = x/15$$

$$(x+100)/v = 25 \Rightarrow v = (x+100)/25$$

$$\text{Ie, } x/15 = (x+100)/25$$

$$\Rightarrow 5x = 3x + 300$$

$$\Rightarrow x = 300/2 = 150$$

26. A train, 800 meter long is running with a speed of 78 km/hr. It crosses a tunnel in 1 minute. What is the length of the tunnel (in meters)?

A. 440 m

B. 500 m

C. 260 m

D. 430 m

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Answer : Option B

Explanation :

Distance = $800+x$ meter where x is the length of the tunnel

Time = 1 minute = 60 seconds

$$\text{Speed} = 78 \text{ km/hr} = 78 \times 10/36 \text{ m/s} = 130/6 = 65/3 \text{ m/s}$$

Distance/time = speed

$$(800+x)/60 = 65/3$$

$$\Rightarrow 800+x = 20 \times 65 = 1300$$

$$\Rightarrow x = 1300 - 800 = 500 \text{ meter}$$

27. Two train each 500 m long, are running in opposite directions on parallel tracks. If their speeds

are 45 km/hr and 30 km/hr respectively, the time taken by the slower train to pass the driver of the faster one is

A. 50 sec

B. 58 sec

C. 24 sec

D. 22 sec

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Answer : Option C

Explanation :

$$\text{Relative speed} = 45 + 30 = 75 \text{ km/hr} = 750/36 \text{ m/s} = 125/6 \text{ m/s}$$

We are calculating the time taken by the slower train to pass the driver of the faster one

.Hence the distance = length of the smaller train = 500 m

$$\text{Time} = \text{distance/speed} = 500 / (125/6) = 24 \text{ s}$$

28. Two trains are running at 40 km/hr and 20 km/hr respectively in the same direction. If the fast train completely passes a man sitting in the slower train in 5 seconds, the length of the fast train is :

A. 19 m

B. $27 \frac{7}{9}$ m

C. $13 \frac{2}{9}$ m

D. 33 m

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Answer : Option B

Explanation :

$$\text{Relative speed} = 40 - 20 = 20 \text{ km/hr} = 200/36 \text{ m/s} = 100/18 \text{ m/s}$$

$$\text{Time} = 5 \text{ s}$$

$$\text{Distance} = \text{speed} \times \text{time} = (100/18) \times 5 = 500/18 \text{ m} = 250/9 = 27 \frac{7}{9} \text{ m} = \text{length of the fast train}$$

29. Two trains are running in opposite directions in the same speed. The length of each train is 120 meter. If they cross each other in 12 seconds, the speed of each train (in km/hr) is

A. 42

B. 36

C. 28

D. 20

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Answer : Option B

Explanation :

$$\text{Distance covered} = 120 + 120 = 240 \text{ m}$$

$$\text{Time} = 12 \text{ s}$$

Let the speed of each train = v . Then relative speed = $v + v = 2v$

$$2v = \text{distance/time} = 240/12 = 20 \text{ m/s}$$

$$\text{Speed of each train} = v = 20/2 = 10 \text{ m/s}$$

$$= 10 \times 36/10 \text{ km/hr} = 36 \text{ km/hr}$$

30. A train 108 m long is moving at a speed of 50 km/hr . It crosses a train 112 m long coming from opposite direction in 6 seconds. What is the speed of the second train?

A. 82 kmph

B. 76 kmph

C. 44 kmph

D. 58 kmph

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Answer : Option A

Explanation :

$$\text{Total distance} = 108 + 112 = 220 \text{ m}$$

$$\text{Time} = 6 \text{ s}$$

$$\text{Relative speed} = \text{distance/time} = 220/6 \text{ m/s} = 110/3 \text{ m/s}$$

$$= (110/3) \times (18/5) \text{ km/hr} = 132 \text{ km/hr}$$

$$\Rightarrow 50 + \text{speed of second train} = 132 \text{ km/hr}$$

$$\Rightarrow \text{Speed of second train} = 132 - 50 = 82 \text{ km/hr}$$

31. How many seconds will a 500 meter long train moving with a speed of 63 km/hr, take to cross a man walking with a speed of 3 km/hr in the direction of the train ?

A. 42

B. 50

C. 30

D. 28

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Answer : Option C

Explanation :

$$\text{Distance} = 500 \text{ m}$$

$$\text{Speed} = 63 - 3 \text{ km/hr} = 60 \text{ km/hr} = \frac{600}{36} \text{ m/s} = \frac{50}{3} \text{ m/s}$$

$$\text{Time taken} = \frac{\text{distance}}{\text{speed}} = \frac{500}{(50/3)} = 30 \text{ s}$$