

In a 100 m race, A can give B 10 m and C 28 m. In the same race B can give C :

Answer: 20 m

Explanation:

$$A : B = 100 : 90.$$

$$A : C = 100 : 72.$$

$$B : C = \frac{B}{A} \times \frac{A}{C} = \frac{90}{100} \times \frac{100}{72} = \frac{90}{72}.$$

When B runs 90 m, C runs 72 m.

$$\text{When B runs 100 m, C runs } \left(\frac{72}{90} \times 100 \right)_{\text{m}} = 80 \text{ m.}$$

∴ B can give C 20 m.

In a 500 m race, the ratio of the speeds of two contestants A and B is 3 : 4. A has a start of 140 m. Then, A wins by:

A. 60 m

B. 40 m

C. 20 m

D. 10 m

Answer: 20 m

Explanation:

To reach the winning post A will have to cover a distance of $(500 - 140)\text{m}$, *i.e.*, 360 m.

While A covers 3 m, B covers 4 m.

While A covers 360 m, B covers $\left(\frac{4}{3} \times 360\right)\text{m} = 480\text{ m}$.

Thus, when A reaches the winning post, B covers 480 m and therefore remains 20 m behind.

\therefore A wins by 20 m.

In a 300 m race A beats B by 22.5 m or 6 seconds. B's time over the course is:

A. 86 sec

B. 80 sec

C. 76 sec

D. None of these

Answer: 80 seconds

Explanation:

B runs $\frac{45}{2}$ m in 6 sec.

∴ B covers 300 m in $\left(6 \times \frac{2}{45} \times 300\right)_{\text{sec}} = 80 \text{ sec.}$

A can run 224 meter in 28 seconds and B in 32 seconds. By what distance A beat B?

Clearly, A beats B by 4 seconds

Now find out how much B will run in these 4 seconds

Speed of B = Distance/ Time taken by B = $224 / 32 = 7$ m/s

Distance covered by B in 4 seconds = Speed \times time = $7 \times 4 = 28$ metre

i.e., A beat B by 28 metre

A runs $1\frac{2}{3}$ times as fast as B. If A gives B a start of 80 m, how far must the winning post be so that A and B might reach it at the same time?

A. 200 m

B. 300 m

C. 270 m

D. 160 m

Answer: 200

Explanation:

Ratio of the speeds of A and B = $\frac{5}{3} : 1 = 5 : 3$.

Thus, in race of 5 m, A gains 2 m over B.

2 m are gained by A in a race of 5 m.

80 m will be gained by A in race of $\left(\frac{5}{2} \times 80\right)_m = 200$ m.

∴ Winning post is 200 m away from the starting point.

In 100 m race, A covers the distance in 36 seconds and B in 45 seconds. In this race A beats B by:

A. 20 m

B. 25 m

C. 22.5 m

D. 9 m

Answer: 20 m

Explanation:

$$\text{Distance covered by B in 9 sec.} = \left(\frac{100}{45} \times 9 \right)_{\text{m}} = 20 \text{ m.}$$

∴ A beats B by 20 metres.

In a 100 m race, A beats B by 10 m and C by 13 m. In a race of 180 m, B will beat C by:

A. 5.4 m

B. 4.5 m

C. 5 m

D. 6 m

Answer: 6 m

Explanation:

$$A : B = 100 : 90.$$

$$A : C = 100 : 87.$$

$$\frac{B}{C} = \frac{B}{A} \times \frac{A}{C} = \frac{90}{100} \times \frac{100}{87} = \frac{30}{29}.$$

When B runs 30 m, C runs 29 m.

$$\text{When B runs 180 m, C runs } \left(\frac{29}{30} \times 180 \right)_{\text{m}} = 174 \text{ m.}$$

∴ B beats C by $(180 - 174) \text{ m} = 6 \text{ m}.$

In a game of 90 points A can give B 15 points and C 30 points. How many points can B give C in a game of 100 points?

A. 140

B. 20

C. 300

D. 50

Answer : Option 20

Explanation :

While A scores 90 points, B scores $(90-15)=75$ points and C scores $(90-30)=60$ points

i.e., when B scores 75 points, C scores 60 points

=> When B scores 100 points, C scores $60/75 \times 100 = 80$ points

i.e., in a game of 100 points, B can give C $(100-80)=20$ points

In a 100 metres race. A runs at a speed of 2 metres per seconds. If A gives B a start of 4 metres and still beats him by 10 seconds, find the speed of B.

A. 1.6 m/sec.

B. 4 m/sec.

C. 2.6 m/sec.

D. 1 m/sec.

Answer : Option A

Explanation :

Speed of A = 2 m/s

Time taken by A to run 100 m distance $\text{speed} = \frac{100}{2} = 50$ seconds

A gives B a start of 4 metres and still A beats him by 10 seconds

=> B runs $(100-4)=96$ m in $(50+10)=60$ seconds

Speed of B = $\frac{\text{distance}}{\text{time}} = \frac{96}{60} = 1.6$ m/s

Q.A and B take part in 100m race. A runs at 5kmph.A gives B a start of 8m and still beats him by 8 seconds. The speed of B is:

A and B take part in 100 m race. A runs at 5 kmph. A gives B a start of 8 m and still beats him by 8 seconds. The speed of B is:

A. 5.15 kmph

B. 4.14 kmph

C. 4.25 kmph

D. 4.4 kmph

Answer: Option **B**

Explanation:

$$\text{A's speed} = \left(5 \times \frac{5}{18} \right) \text{m/sec} = \frac{25}{18} \text{ m/sec.}$$

$$\text{Time taken by A to cover 100 m} = \left(100 \times \frac{18}{25} \right) \text{sec} = 72 \text{ sec.}$$

$$\therefore \text{Time taken by B to cover 92 m} = (72 + 8) = 80 \text{ sec.}$$

$$\therefore \text{B's speed} = \left(\frac{92}{80} \times \frac{18}{5} \right) \text{kmph} = 4.14 \text{ kmph.}$$

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

- a) 3 : 2 b) 1:5 c) 3:1 d) 2:3

$$27*3+17*2=23*(3+2)$$

Ans 3 : 2

A man covers $\frac{1}{4}^{\text{th}}$ of the journey @24km/hr, and $\frac{1}{4}^{\text{th}}$ @12km/hr, and remaining @36 km/hr.
find his average speed

Let distance be 100 km

25 KM with speed of 24 km/hr

25 Km with speed of 12 KM/hr

50 KM with speed of 36 KM/hr

Therefore Total Distance / Total time Taken

$$100 / (25 / 24 + 25 / 12 + 50 / 36) = 288 / 13 = 22.15 \text{ Km/hrs}$$