**1. The length of the train is 105 meters takes 40.5 seconds to cross a tunnel of length 300 meters. What is the speed of the train in km/hr?**

**A. 33 B. 36**

**C. 40 D. 38**

|  |
| --- |
|  |
| |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | Speed = |  | |  | | --- | | 105 + 300 | | 40.5 | |  | m/sec = |  | |  | | --- | | 405 | | 40.5 | | x | |  | | --- | | 18 | | 5 | |  | km/hr = 36 km/hr. | |

**2. A man running at 27 kmph alongside a railway track is 240 meters ahead of the engine of a 120 meter long train running at 45 kmph in the same direction. In how much time will the train pass the man?**

**A. 45sec B. 72sec**

**C. 36sec D. none of these**

|  |
| --- |
|  |
| Speed of train relative to man = (45 – 27) km/hr = 18 km/hr |
|  |
| |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | = |  | 18 x | |  | | --- | | 5 | | 18 | |  | m/sec = 5 m/sec. |  |  | |
|  |
| Distance to be covered = (240 + 120) m = 360 m. |
|  |
| |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | |  | | --- | |  | |  | Time taken = |  | |  | | --- | | 360 | | 05 | |  | sec = 72 sec. | |

**3. 2 trains 110 m and 140 m long run at the speed of 60 km/hr and 40 km/hr respectively in opposite directions. The time which they take to cross each other, is:**

**A. 8sec B. 6sec**

**C. 9sec D. none of these**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | Relative speed = (60 + 40 ) km/hr = |  | 100 x | |  | | --- | | 5 | | 18 | |  | m/sec = |  | |  | | --- | | 250 | | 9 | |  | m/sec. |  | |
|  |
| Distance covered in crossing each other = (110 + 140) m =250 m |
|  |
| |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | Required time = |  | 250 x | |  | | --- | | 9 | | 250 | |  | sec = | 9sec |  | |

**4. A train, whose length is 800 meters is running at a speed of 90 km / hr. If it crosses a tunnel in 1 minute, then the length of the tunnel (in meters) is:**

**A. 700 B. 600**

**C. 705 D. 706**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | Speed = |  | 90 x | |  | | --- | | 5 | | 18 | |  | m/sec = |  | 25 |  | m /sec; |  |  | |
|  |
| Time = 1 minute = 60 sec. |
|  |
| Let the length of the tunnel be *x* meters. |
|  |
| |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | Then, | |  | | --- | | 800 + *x* | | 60 | | = | 25 |  | (800 + *x*) = 1500 | |  | | --- | |  | | *x* = 700. |  |  | |
|  |

**5. A train whose length is 270 m, running at the speed of 100 kmph 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. 200 B. 100**

**C. 170 D. 180**

|  |
| --- |
|  |
| |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | Relative speed = (120 + 80) km/hr = |  | 180 x | |  | | --- | | 5 | | 18 | |  | m/sec = | 50 |  |  | m/sec. |  | |
|  |
| Let the length of the other train be *x* meters. |
|  |
| |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | Then, |  | |  | | --- | | *x* + 270 | | 9 | | = | 50 | |  | | --- | |  | | *x* + 270 = 450 | |  | | --- | |  | | *x* = 180 |  | |
|  |

**6. A train overtakes two people who are waking in the same direction in which the train is going, at the speed of 2 kmph and 4 kmph and passes them completely in 9 and 10 seconds respectively. The length of the train is:**

**A. 225m B. 27m**

**C. 220m D. 230m**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | 9 kmph = |  | 9 x | |  | | --- | | 5 | | 18 | |  | m/sec = | |  | | --- | | 5 | | 2 | | m/sec and 18 kmph = | |  | | --- | | 5 | |  | | m/sec. | |
|  |
| Let the length of the train be *x* metres and its speed be *y* m/sec. |
|  |
| |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | |  | | --- | |  | | Then, | |  | |  | |  | | --- | | *x* | |  | | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | |  | *y* - | |  | | --- | | 5 | | 2 | |  | | | |  | | --- | |  | | = 9 and | |  | | |  | | --- | | *x* | |  | | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | |  | *y* -5 | |  | | --- | |  | |  | |  | | | |  | | --- | |  | | = 10 | |  | |  |  | |
|  |
| |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | |  | | --- | |  | |  | 18*y* - 45 = 2*x* and 10 (*y* - 5) = *x* | |  | | --- | |  | |  |  |  |  |  | |
|  |
| On solving, we get : *x* = 225. |
|  |
| |  |  |  |  |  | | --- | --- | --- | --- | --- | | |  | | --- | |  | |  | Length of the train is 225 m. |  | |

**7. 2 trains, one from Bangalore to Chennai and the other from Chennai to Bangalore, start simultaneously. After they meet, the trains reach their destinations after 4 hours and 9 hours respectively. The ratio of their speeds is:**

**A. 4:5 B. 4:3**

**C. 3:2 D. none of these**

|  |
| --- |
| Let us name the trains as A and B. Then, |
|  |
| |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | (A's speed) : (B's speed) = | *√b* | : | *√a* | = | *√9* | : | *√4* | = | 3 : 2 |  |  |  |  | |
|  |

**8. A train moves past a electric pole and a bridge 240 m long in 8 seconds and 20 seconds respectively. What is the speed of the train?**

**A. 75 B. 78**

**C. 72 D. none of these**

|  |
| --- |
|  |
| Let the length of the train be *x* meters and its speed by *y* m/sec. |
|  |
| |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | | They, | |  | | --- | | *x* | | *y* | | = 8 | |  | | --- | |  | | *x* = 8*y* |  | |
|  |
| |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | Now, | |  | | --- | | *x* + 240 | | 20 | | = *y* | |  | | --- | |  | | 8y + 240 = 20y | |  | | --- | |  | | *y = 20.* |  |  | |
|  |
| |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | |  | | --- | |  | | Speed = 20 m/sec = |  | 20 x | |  | | --- | | 18 | | 5 | |  | km/hr = 72 km/hr. | |

**9. A train passes a platform in 40 seconds and a man standing on the platform in 15 seconds. If the speed of the train is 72 km/hr, what is the length of the platform?**

**A. 400 B. 500**

**C. 700 D. 300**

|  |
| --- |
|  |
| |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | Speed = |  | 72 x | |  | | --- | | 5 | | 18 | |  | m/sec = 20 m/sec. |  |  | |
|  |
| Length of the train = (20 x 15) m = 300 m. |
|  |
| Let the length of the platform be *x* meters. |
|  |
| |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | Then, | |  | | --- | | *x* + 300 | | 40 | | = 15 | |  | | --- | |  | | x + 300 = 600 | |  | | --- | |  | | *x* =300m. | |

**10. 2 stations A and B are 10 km apart. One train starts from A at 9 a.m. and travels towards B at 20 kmph. Another train starts from B at 10 a.m. and travels towards A at a speed of 30 kmph. At what time will they meet?**

**A. 9 am B. 10 am**

**C. 11 p.m D. none of these**

|  |
| --- |
|  |
| Suppose they meet *x* hours after 9 a.m. |
|  |
| Distance covered by A in *x* hours = 20*x* km. |
|  |
| Distance covered by B in (*x* -1) hours = 30 (*x* – 1) km. |
|  |
| |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | | |  | | --- | |  | | 20*x* + 30 (*x* - 1) = 100 |  | 50*x* = 70 |  | *x* = 7/5. |  |  | |
|  |
|  |
|  |