Problems on Trains

1. Speed of the train = $\frac{\text{distance (d)} + \text{length of the train (LT)}}{\text{Time (T)}}$

$$ST = \frac{d + LT}{T}$$

15. Given $ST = 132 \text{ kmph} \times \frac{5}{18} = \frac{110}{3}$ m/sec

$LT = 110$ m

$D = 165$ m

$T = ?$

$$\frac{110}{3} = \frac{165 + 110}{T}$$

$$T = 7.5 \text{ sec}$$

16. Given

23 sec $\longrightarrow$ 272 m

19 sec $\longrightarrow$ 200 m

speed is constant

$$\frac{272 + LT}{23} = \frac{200 + LT}{19}$$

$$LT = 142 \text{ m}$$

(or)

23 sec $\longrightarrow$ 272 m

19 sec $\longrightarrow$ 200 m

4 sec $\longrightarrow$ 72 m

1 sec $\longrightarrow$ 18 m

23 sec $\longrightarrow$ $23 \times 18 = 414$

19 sec $\longrightarrow$ $19 \times 18 = 342$

$L \cdot T = 414 - d \Rightarrow 414 - 272 = 142$ m

$L \cdot T = 342 - d \Rightarrow 342 - 200$

$= 142$ m