

Question

Given:

$$v_1 = 36 \frac{km}{h} = 10 \frac{m}{s}$$

$$v_2 = 54 \frac{km}{h} = 15 \frac{m}{s}$$

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

Need to find: Length of the second train.

Solution:

The passengers of the first train see that the second train moving with the velocity which is equal to the sum of the first and second trains' velocities: $v = v_1 + v_2$. Then the length of the second train is $L_2 = v \cdot t = (v_1 + v_2) \cdot t = (10 + 15) \cdot 6 = 150 \text{ m}$.

Answer: the length of the second train is 150 meters.