Answer on Question #53600-Physics-Other

A starts from his home at 10 am on a bicycle and travels 4 km in 15min towards his school and his brother B starts at 11 am on a scooter at speed of 40 km per hour towards the same school. Find where and when A and B would meet.

Solution

In one hour A will be closer to school by the distance of d which equals:

$$d = 4\,km\left(\frac{60min}{15min}\right) = 16\,km.$$

A and B meet at the point being $x + d$ km away from home in t hours. Then,

$$x = v_1 t,$$

where v_1 is the speed of A being of $16\frac{km}{h}$ and the same for B:

$$x + d = v_2 t,$$

where v_2 is the speed of B being of $40\frac{km}{h}$.

Now we have the system of equations:

$$\begin{cases} x = 16t \\ x + 16 = 40t \end{cases}$$

The solution is

$$\begin{cases} t = 1.5\,h \\ x = 24\,km \end{cases}$$

Total distance before meeting is

$$x + d = 24\,km + 16\,km = 40\,km.$$

They will meet at the point being 40 km away from home in 1.5 hours after B starts to ride.

Answer: 40 km away from home in 1.5 hours after B starts to ride.