

Question #70815

A boy walked for 4hrs and bicycled for 3 hrs covering a total distance of 45 km later he walked for 2 hrs and bicycled for 4 hrs covering 50 km what is his average speed of walking.

Solution

Unfortunately, the problem has no solution or the task is formulated incorrectly. The definition of average speed is the total distance traveled divided by the total time elapsed.

$$V_{av} = \frac{S_{total}}{t_{total}} = \frac{S_1+S_2+S_3+\dots+S_n}{t_1+t_2+t_3+\dots+t_n}$$

Since we have to find out the average speed of walking we have to know total time of walking and total distance of walking. We do know total time of walking (4 hrs and 2 hrs, total time – 6 hrs), but we do not know what distances he covered by foot at first and later. We even do not know his velocities of walking at first and later (remember, that they are not similar as well as the velocities of bicycling otherwise the concept of the average speed makes no sense). That's why the portions of the distances covered by foot must be absolutely different in both cases (at first and later). For example, in first case he covered 10 km by foot having speed v_1 and 35 km by bicycle with v_2 . But that does not mean he moved with the same speeds v_1 and v_2 later. And if he covered 15 km by foot and 20 km by bicycle? We'll have another v_1 and v_2 that have nothing in common with the velocities of his moving later. Thus we may have a huge pack of v_1 and v_2 and absolutely the same pack with v_3 and v_4 (his moving later). If we don't have definite speeds of walking, we can say nothing about the distances he covered, that's why it's impossible to know the average speed.

In short we have lack of starting data.

From the other hand it's easy to find the average speed of total moving:

$$V_{av} = \frac{45+50}{4+3+2+4} = \frac{95}{13} = 7.3 \text{ (km/h)}.$$

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