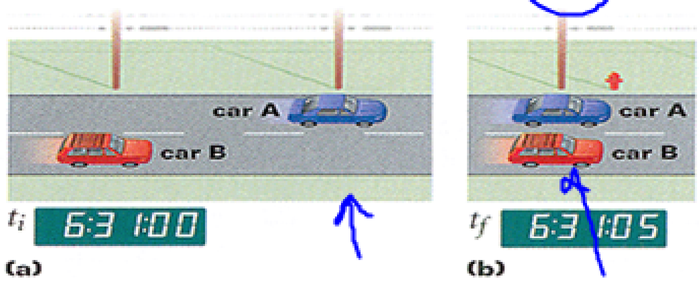
Two cars are traveling on a desert road, as shown below. After 5.0 s, they are side by side at the next telephone pole. The distance between the poles is 91.5 m.



0   91.5m   183m

+ →

$$\vec{d} = \vec{d}_o + \vec{v}_i \Delta t$$

a) $183m - 91.5m = 91.5m$

b) $183m - 0m = 183m$

c) $183m = 91.5m + V_i (5s)$

$91.5m = V_i (5s)$

$\frac{91.5m}{5s} = V_i$

$V_i = 18.3\ m/s$

d) $183m = 0m + V_i (5s)$

$\frac{183m}{5s} = V_i = 36.6\ m/s$

8. –/2 points Notes Question: HoltPhys06 2.P.010.

Sally travels by car from one city to another. She drives for 23.0 min at 58.0 km/h, 45.0 min at 45.0 km/h, and 26.0 min at 21.0 km/h, and she spends 10.0 min eating lunch and buying gas.

(a) Determine the average speed for the trip.

km/h

(b) Determine the total distance traveled.

km

$t_1 \quad V_1 \quad t_2 \quad V_2 \quad t_3 \quad V_3 \quad t_4$

$$t_t = t_1 + t_2 + t_3 + t_4 \qquad V_4 = 0\ m/s$$

$$t_t = \left(\frac{23\ min}{60\ min}\right) + \left(\frac{45\ min}{60\ min}\right) + \left(\frac{26\ min}{60\ min}\right) + \left(\frac{10\ min}{60\ min}\right)$$

$$X\ min \left[\frac{1\ hr}{60\ min}\right] = hr$$

$$t_t = 1.733333\ hr$$

$$\vec{d} = \vec{d}_o + \vec{v}_i \Delta t$$

$$d_t = d_1 + d_2 + d_3 + d_4$$

$$V_1 t_1 + V_2 t_2 + V_3 t_3 + V_4 t_4$$

$$d_t = (58\ km/h)\left(\frac{23}{60} hr\right) + (45\ km/h)\left(\frac{45}{60} hr\right) + (21\ km/h)\left(\frac{26}{60} hr\right) + (0\ km/h)\left(\frac{10}{60} hr\right)$$

$$d_t = 65.1\ km$$

$$65.1\ km = 0\ km + V_i (1.733\ hr)$$

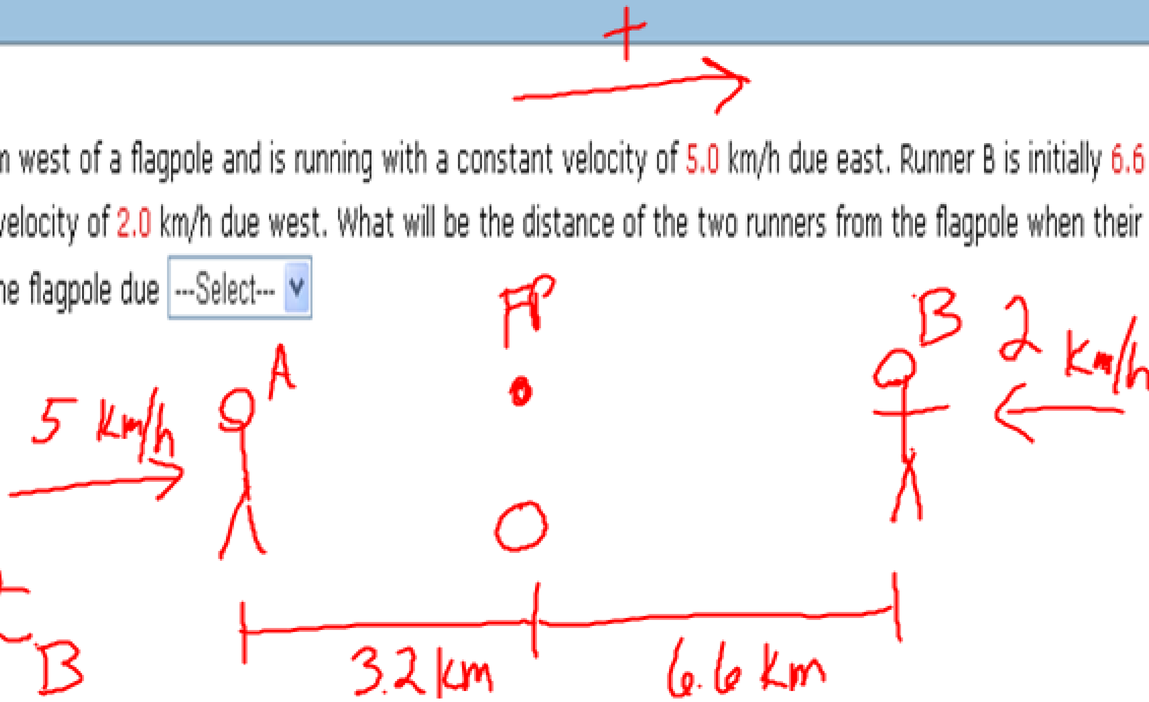
$$V_i = \frac{65.1\ km}{1.733333\ hr}$$

$$V_i = 37.5\ km/hr$$

10. −/2 points Notes — Question: HoltPhys06 2.P.011.

Runner A is initially 3.2 km west of a flagpole and is running with a constant velocity of 5.0 km/h due east. Runner B is initially 6.6 km east of the flagpole and is running with a constant velocity of 2.0 km/h due west. What will be the distance of the two runners from the flagpole when their paths cross?

[ ] km from the flagpole due [---Select---]



$t_A = t_B$

$d_A = d_B$

a) $d_A = -3.2\text{ km} + (5\text{ km/h})\,t_A$

$d_A + 3.2\text{ km} = (5\text{ km/hr})\,t_A$

$$\frac{d_A + 3.2\text{ km}}{5\text{ km/hr}} = t_A$$

$$\vec{d} = \vec{d}_o + \vec{v}_i \Delta t$$

$$\frac{d_A + 3.2\,km}{5\,km/hr} = t_A$$

b) $$d_B = 6.6\,km + \left(-2\,km/h\right) t_B$$

$$d_B = 6.6\,km + \left(-2\,\cancel{km/h}\right)\left[\frac{d_A + 3.2\,km}{5\,\cancel{km/hr}}\right]$$

$$d_B = 6.6\,km + \left(\frac{-2}{5}\right)\left(d_A + 3.2\,km\right)$$

$$d_B = 6.6\,km + (-.4)\left(d_A + 3.2\,km\right)$$

$$d_B = 6.6\,km - .4\,d_A - 1.28\,km$$

$$1.4\,d_B = 5.32\,km$$

$$d_B = \frac{5.32\,km}{1.4}$$

$$d_B = 3.80\,km$$

4. –/1 points Notes

It takes a runner 3 h, 10 min, 17 s to run a marathon. If the distance of a marathon is 42.2 km, what is the average speed of the runner?

[ ] m/s

$$\vec{d} = \vec{d}_o + \vec{v}_i \Delta t$$

$3\,hr\left(\frac{3600\,s}{1\,hr}\right) = 10800\,s$

$10\,min\left(\frac{60\,s}{1\,min}\right) = 600\,s$

$17\,s = 17\,s$

$11417\,s$

$42200\,m$

$42200\,m = V(11417\,s)$

$V = 3.70\,m/s$