

9. Converting to seconds, the running times are $t_1 = 147.95$ s and $t_2 = 148.15$ s, respectively. If the runners were equally fast, then

$$s_{\text{avg } 1} = s_{\text{avg } 2} \implies \frac{L_1}{t_1} = \frac{L_2}{t_2} .$$

From this we obtain

$$L_2 - L_1 = \left(\frac{148.15}{147.95} - 1 \right) L_1 \approx 1.35 \text{ m}$$

where we set $L_1 \approx 1000$ m in the last step. Thus, if L_1 and L_2 are no different than about 1.35 m, then runner 1 is indeed faster than runner 2. However, if L_1 is shorter than L_2 than 1.4 m then runner 2 is actually the faster.