

11. (a) The rest length $L_0 = 130$ m of the spaceship and its length L as measured by the timing station are related by Eq. 38-13. Therefore, $L = (130 \text{ m})\sqrt{1 - (0.740)^2} = 87.4$ m.
- (b) The time interval for the passage of the spaceship is

$$\Delta t = \frac{L}{v} = \frac{87.4 \text{ m}}{(0.740)(3.00 \times 10^8 \text{ m/s})} = 3.94 \times 10^{-7} \text{ s} .$$