

Problem 8

Harvard Bridge, which connects MIT with its fraternities across the Charles River, has a length of 364.4 Smoots plus one ear. The unit of one Smoot is based on the length of Oliver Reed Smoot, Jr., class of 1962, who was carried or dragged length by length across the bridge so that other pledge members of the Lambda Chi Alpha fraternity could mark off (with paint) 1-Smoot lengths along the bridge. The marks have been repainted biannually by fraternity pledges since the initial measurement, usually during times of traffic congestion so that the police cannot easily interfere. (Presumably, the police were originally upset because the Smoot is not an SI base unit, but these days they seem to have accepted the unit.) Figure 1-4 shows three parallel paths, measured in Smoots (S), Willies (W), and Zeldas (Z). What is the length of 50.0 Smoots in (a) Willies and (b) Zeldas?



Figure 1-4 Problem 8.

Solution

Convert Smoots to Willies.

$$50.0 \text{ Smoots} = 50.0 \cancel{\text{Smoots}} \times \frac{(258 - 0) \text{ Willies}}{(212 - 0) \cancel{\text{Smoots}}} \approx 60.8 \text{ Willies}$$

Convert Smoots to Zeldas.

$$50.0 \text{ Smoots} = 50.0 \cancel{\text{Smoots}} \times \frac{(216 - 60) \text{ Zeldas}}{(212 - 32) \cancel{\text{Smoots}}} \approx 43.3 \text{ Zeldas}$$