

25. A speed follows a normal distribution $V \sim N(78, 0.5^2)$ km/h . What is the distribution in ft/s unit.

Solution

Due to $1 \text{ ft} = 0.3048 \text{ m}$, we have

$$\mu_V = 78 \text{ km/h} = \frac{78 \text{ km}}{\text{h}} \left(\frac{1000 \text{ m}}{\text{km}} \right) \left(\frac{1 \text{ h}}{3600 \text{ s}} \right) \left(\frac{1}{0.3048} \right) = 71.08 \text{ ft/s}$$

$$\sigma_V = 0.5 \text{ km/h} = \frac{0.5 \text{ km}}{\text{h}} \left(\frac{1000 \text{ m}}{\text{km}} \right) \left(\frac{1 \text{ h}}{3600 \text{ s}} \right) \left(\frac{1}{0.3048} \right) = 0.46 \text{ ft/s}$$

Thus, the distribution of the speed in ft/s unit is $V \sim N(71.08, 0.46^2)$ ft/s .

Ans.