

Answer on Question #48616 – Math – Statistics and Probability

Question:

A statistics professor plans classes so carefully that the lengths of her classes are uniformly distributed between 46.0 and 56.0 minutes. Find the probability that a given class period runs between 50.5 and 50.75 minutes.

Find the probability of selecting a class that runs between 50.5 and 50.75 minutes.

Solution:

The probability density of the random variable is given by

$$f(x) = \begin{cases} 0, & x \notin (46; 56) \\ \frac{1}{10}, & x \in (46; 56) \end{cases}$$

Probability that a given class period runs between 50.5 and 50.75 minutes:

$$\int_{50.5}^{50.75} \frac{1}{10} dx = \frac{1}{10} (50.75 - 50.5) = 0.025;$$

The probability of selecting a class that runs between 50.5 and 50.75 minutes (A) is

$$P(A) = \frac{(50.75 - 50.5)}{(56 - 46)} = 0.025.$$

Answer: Probability that a given class period runs between 50.5 and 50.75 minutes is **0.025**;

The probability of selecting a class that runs between 50.5 and 50.75 minutes is **0.025**